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ABSTRACT

The literature on business involvement in education in Canada, the United States, Germany, Denmark, Sweden, Switzerland, Japan, the United Kingdom, and other European countries was reviewed. Special attention was paid to the following topics: workplace trends/changes; skill requirements/deficits; youth employment/unemployment; integration versus separation of vocational and academic curricula; education spending; school leavers; organizations interested in school-to-work transitions; apprenticeships; vocational/career guidance/counseling; government role in education for work; cooperative programs; continuous learning; industry-based education; training of teachers/trainers and teacher education/development; and assessment of skills/knowledge. The literature regarding the Japanese and continental European experience identified a history of cooperation among business, labor, and government in developing/delivering high-quality youth training that was not present in Canada. Like Canada, however, the other countries studied were struggling with the issues of global competitiveness, faltering economies, social tensions induced by immigration, high unemployment, long-term welfare dependency, and a changing workplace. It was concluded that Canadian policymakers and educators must develop a school-to-work transition system possessing the following traits: responsive to the concerns of industry; flexible; committed to quality; and oriented toward integration of academic and vocational education and provision of career education, guidance, and support and opportunities for lifelong learning. (Contains 88 references.) (MN)

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BUSINESS INVOLVEMENT IN EDUCATION LITERATURE REVIEW

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- *Proceedings Report: Invitational Forum on Business Involvement in Education*
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TABLE OF CONTENTS

Page
1. INTRODUCTION 1

2. BACKGROUND AND REVIEW 2
2.1 Trends in the Workplace 2
2.2 High Level Skills Requirements in Today's Labour Market 2
2.3 Workplace Changes and Youth Unemployment 3
2.4 Skills Deficits 4
2.5 Workplace Training 5
2.6 Features of Traditional Vocational Education 6
2.7 To Integrate or Separate Vocational and Academic Curriculum 7
2.8 Student Part-Time Work 7

3. CANADIAN EXPERIENCE 8
3.1 Education Spending 8
3.2 School Leavers 9
3.3 School Year 9
3.4 Lack of Coherence in Education and the Labour Market 10
3.5 Emphasis on Academic Curriculum 10
3.6 Organizations Interested in School-to-Work Transitions 11
3.7 Employability Skills Profile/Ethical Guidelines for Business-Education Partnerships 11
3.8 Findings from Economic Council of Canada,: *A Lot to Learn: Education and Training in Canada*, 1992 12
3.9 Employment and Immigration Canada Research Findings 13
3.10 Apprenticeship System 14
3.11 Career Counselling 15
3.12 Prosperity Action Plan 15
3.13 Role of the Federal Government 17
3.14 Canada as a Market Model 18
3.15 Provincial Initiatives 18

4. UNITED STATES EXPERIENCE 22
4.1 Background within the Context of Federal Legislation and Initiatives 22
4.2 U.S. National Studies and Commissions 26
4.3 Youth Studies 26
4.4 National Center for Research in Vocational Education 27
4.5 Co-op Education 30
4.6 Youth Apprenticeship 34
4.6.1 Description of Youth Apprenticeship Initiatives 35
4.6.2 Summary of Findings Related to Youth Apprenticeship 41

TABLE OF CONTENTS
(Continued)

Page

4.7 School-Based Enterprise 42
4.8 Mentoring Programs 43
4.9 Electronic Forum Initiatives 43
4.10 Formulating Effective Partnerships 43
4.11 Secretary's Commission on Achieving Necessary Skills (SCANS) 45
4.12 Reconstructing Urban Schools with Work-Centered Education 45
4.13 Industry-Based Education: A New Approach for School-to-Work Transition 47
4.14 Education for Employment in the New Economy (CLC -- Center for Learning and Competitiveness -- University of Maryland's School of Public Affairs) 49
4.15 Part-Time Employment 51
4.16 General Implications for Strategic Decisions and Policy Development 52

5. GERMAN EXPERIENCE 55
5.1 Features and Characteristics 55
5.2 Social Cohesion 56
5.3 Curriculum Options 56
5.4 Commitment of Employers 57
5.5 Continuous Learning 58
5.6 Vocational Guidance 59
5.7 Role of Government 60
5.8 Key Elements of the German System that Support a Quality Learning Program of Career Preparation 61
5.9 Role of the Chambers and Training Centres 62
5.10 Assessment of Knowledge and Skills 62
5.11 Training of Trainers and Teacher Development 63
5.12 Challenges for the German Vocational System 63
5.13 Implications of the German Model 64

6. DANISH EXPERIENCE 65
6.1 Features and Characteristics 65
6.2 Curriculum and Programs in the Learning Experience 65
6.3 Commitment of Employers 67
6.4 Key Elements that Support a Quality Program of Career Preparation 67
6.5 Role of Government 68
6.6 Role of the Trade and Education Committees 68
6.7 Guidance and Counselling Services 69
6.8 Assessment of Knowledge and Skills 69

TABLE OF CONTENTS
(Continued)

Page

6.9 Training of Teachers and Teacher Development 70
6.10 Challenges for the Danish Vocational System 70

7. SWEDEN EXPERIENCE 71
7.1 Features and Characteristics 71
7.2 Role of Government 74
7.3 Key Elements that Support a Quality Program of Career Preparation 74
7.4 Role of the Employee and Employer Associations 75
7.5 Curriculum and Programs in the Learning Experience 75
7.6 Assessment of Knowledge and Skills 77
7.7 Training of Trainers and Teacher Development 77
7.8 Vocational Guidance 77
7.9 Challenges for the Swedish Vocational System 77

8. SWITZERLAND 79
8.1 Project-Focused Apprenticeship 79

9. GENERAL SUMMARY OF THE EUROPEAN EXPERIENCE 80

10. JAPAN 83
10.1 Strengths of the Japanese system 83
10.2 Key Features Contributing to Japanese Success 83
10.3 Summary of the Japanese Experience 86

11. THE UNITED KINGDOM 87
11.1 Features of the Education System 87
11.2 Summary of the United Kingdom Experience 90

12. IMPLICATIONS AND CONSIDERATIONS FOR POLICY DEVELOPMENT 92

LIST OF TABLES

1. Public Sector Expenditure on Education as % of GDP, 1989 8
2. Number of School Days/Year 10

APPENDIX

A. Bibliography

1. INTRODUCTION

This literature review was undertaken to assist the MLA Implementation Team on Business Involvement and Technology Integration to identify current practices, thinking and relevant research regarding the main issues related to business involvement in education. The review addresses the preparation of students for the world of work and the role of business and education as partners in the school-to-work transition.

Background information about the Canadian context is provided as is information about the practices and experiences of other countries. This information will provide the MLA Implementation Team with an understanding of alternative strategies for developing successful practice in business and education partnerships to provide the best opportunities for Alberta's young people and better prepare students for the world of work. In developing initiatives and strategies for Alberta government policy, it will be important that the strengths and weaknesses of the practices in other jurisdictions be considered and the relevance to Alberta assessed.

2. BACKGROUND AND OVERVIEW

A number of issues have precipitated a keen interest in the subject of school to work transitions for young people today.

At the turn of the century schools were viewed in a similar fashion to now -- as a vehicle for economic growth and enhancement of competitiveness. The response was to have a form of vocational education separated from academic education where vocational education with little academic content led to working class jobs, and academic education led to university and professional careers. Over the next eighty years this separation was continued with tracking, ability grouping and testing which further segregated students.

2.1 TRENDS IN THE WORKPLACE

Current trends in business and the workplace have a major impact on education and the transitions from school-to-work across Canada. New structures are emerging in business today marked by downsizing, reduction in hierarchical management, an emphasis on core competencies, outsourcing, self-managed work teams, concentration on competitive advantage and innovation. Those entering the work force for the first time require a multiplicity of well honed skills and abilities to cope with these changes. In addition, there is increasing concern about sustainability in all sectors -- business, the environment, and society generally. These trends indicate a strong focus on life-long learning. The quality of life depends upon the ability to change and to adapt to change and the realization that scarce resources must be shared. Implications from the literature point to the necessity for collaboration and cooperation among business and education for the mutual benefit of both sectors.

2.2 HIGH LEVEL SKILLS REQUIREMENTS IN TODAY'S LABOUR MARKET

In the early 1980s, a marked reduction in North American manufacturing industries reduced employment for those without post-secondary education. At the same time, the U.S. National Longitudinal Survey of Youth Labour Market Experience showed a higher differential in earnings for high school graduates who were competent in mathematics, and this survey identified that increasingly the workplace is demanding mental ability as a criteria for job acquisition. Also, the gain in relative earnings of college graduates compared to high school graduates in the U.S. is a further indication of greater demand for mental skill in the workplace.

Human Resources Development

Canada in 1994 estimated that almost two-thirds of new jobs between 1991 and 2000 will require at least thirteen years of education or training, and 45% will require more than 16 years. Increasingly, people in the workforce will be required to renew and update their skills regularly to keep abreast of changing job requirements and new technological advances and workplace innovations. A 1992 Statistics Canada survey highlighted the changing workforce, knowledge and skill requirements; 43% of the respondents indicated that they were in jobs that had no link to their education or training. The difficulty experienced by young people without high skill levels in the workforce is reflected in unemployment statistics. The unemployment rate for those with a high school education is three times the rate for those with a university degree, and the average earnings are significantly lower. Of high school educated Canadians between ages 25 and 29, only 59% of men and 45% of women have full year, full-time jobs.

2.3 WORKPLACE CHANGES AND YOUTH UNEMPLOYMENT

Over the past fifteen years, part-time work has accounted for much of the job creation that has taken place in North America. Today about four out of ten jobs in Canada fall outside the traditional full-time, forty hours per week. While work is becoming less permanent, accompanied by less security, there is potentially more individual freedom. These changes in the workplace, including the requirements of the labour market for higher level skills, are requiring those concerned with the delivery of education to ask whether school-to-work systems should prepare students not only for first full-time jobs, but as well for career transitions throughout their working lives with a focus on continued life-long learning.

Lifelong employment with a single employer is no longer a Canadian reality. In any given year up to one-quarter of all employees have been in their jobs a year or less, a reflection of the fluidity in the current work world. Technological advances, including microchip and telecommunications revolutions; increased global competitiveness; and work place innovation also require higher levels of education along with more advanced and specialized skills. Consequently, for young people, a key to acquiring and keeping a job will be to continually update their skills.

Workplace changes are taking place throughout the whole of the Western world as well as in other countries like Japan. These changes are having an impact on employment rates, particularly among young adults. The scarcity of stable employment has made it difficult for young people to find career jobs right after high school. The U.S. National Center for Research in Vocational Education has identified that in mid-1993 unemployment rates for 16 to 24 year olds were:

- 23% in France,
- 17% in Britain, and
- 20% for 12 nation European Community.

In the U.S. in mid-1993, the unemployment rates for 18 and 19 year olds was 19% and among 20 to 24 year olds was 11%. In Canada in 1993, 17.7% of Canadian youth ages 15 to 24 in the labour force were unemployed; males in this age group faced an unemployment rate of 20.2%. The 1994 Canadian Labour Force Development Review indicated that one out of every ten Canadians in the labour market was unemployed and looking for work, and youth were the hardest hit by unemployment. The Canadian Youth Foundation Study, 1995, showed a similar unemployment rate of 18% for youth 15 to 25 years old.

2.4 SKILLS DEFICITS

A recent Conference Board of Canada survey (1990) showed that 70% of Canadian businesses considered illiteracy a problem in their firms. One-third of respondents indicated that literacy deficits impeded general training and/or acquisition of new and advanced skills, and some indicated that they had a specific policy in their businesses to deal with these deficits. Responding firms indicated that 36% of them had a pre-employment test to screen out illiterates and innumerates. Employers indicated that they experience difficulties in hiring employees with certain technical skills, and 58% of respondents considered elementary and secondary schools were lacking in this regard. Compared to countries like Japan and Germany, Canada has fewer trained workers in scientific fields.

2.5 WORKPLACE TRAINING

Canada does not have a well-developed training culture. A 1990 Statistics Canada survey showed that one-quarter of small firms and three-quarters of large firms conduct training and that, overall, only about 15% of all Canadian companies have a training budget. Canadian business spends far less proportionately on employee training programs than do competitors in other nations. On a per-employee basis, spending on formal training by private firms in 1987 was less than half that in the U.S.

In its 1994 review, the Canadian Labour Force Development Board found that two-thirds of respondents said they were either moderately or extremely dissatisfied with the job preparedness of public school graduates; and furthermore, they did not feel it to be their responsibility to bridge the gap. This dissatisfaction was reflected in a 1995 Financial Post/Arthur Andersen survey which found that 60% of the entrepreneurs who participated in the survey think schools are not producing the type of graduates they want to hire and that "the education system is not market-sensitive". This result is an increase from 56% who held that opinion in 1994, and 50% in 1993.

The Labour Force Development review identified a number of ways in which employer-led training could be promoted:

- employer tax credits;
- levies for training;
- wage subsidies and direct government assistance;
- paid educational leave;
- individual training accounts; and
- work-sharing arrangements.

Also advocated was the use of technology to provide services such as an "electronic hiring hall" that could be readily accessed from employment centres or personal computers. A major recommendation of the Labour Force Development Board was that a national strategy on career development in the schools and guidance and career and employment counselling for learning and work be developed.

2.6 FEATURES OF TRADITIONAL VOCATIONAL EDUCATION

The literature identifies growing dissatisfaction, particularly among the business sector, with the current state of vocational education. Four features distinguish vocational education over the past century and the literature points to these as areas of concern:

1. **Curriculum has operated in isolation from the rest of the secondary and post-secondary offerings.** Few if any linkages have existed between academic and vocational courses. There has typically been limited communication between vocational and academic faculty; generally academic teachers have focused little attention on vocational interests of students, and vocational teachers have usually emphasized the teaching of job-specific skills.

2. **Vocational education has focused primarily on occupational-specific preparation for work.** Generally, little attention has been given to more generalized knowledge requirements in related fields, or examination of the larger sector or industrial context. Rather, attention has been placed on skill development suited to a particular occupation.

3. **Occupational focus of vocational education has been limited to preparation for jobs requiring less than a baccalaureate degree.** There is a general perception that vocational education is not consistent with preparation for a college or university education. Along with isolation from the academic curriculum and preparation for specific jobs, these two factors have likely contributed most substantially to the view that the vocational curriculum provides a second-class education, and is sometimes seen as a "dumping ground" for students who are not able to make it into baccalaureate programs.

4. **Vocational education has generally been the purview of educators.** Typically business and labour have not assumed a partnership role although apprenticeship and co-op education are exceptions. The transitions from school to work as a result of successful completion of a vocational program are not coherent for most students. To a certain extent this deficiency can be attributed to lack of significant partnership involvement among business/labour/education.

2.7 TO INTEGRATE OR SEPARATE VOCATIONAL AND ACADEMIC CURRICULUM

The question as to whether to integrate or separate high school vocational and academic curriculum has been a hotly debated subject throughout most of the history of education in both Canada and the United States. These approaches in fact were articulated by the American, John Dewey, who argued in 1916 that academic and vocational education should not be separated and advocated a broader "education through occupations" which would avoid the narrowing of the education of those preparing for lower skilled jobs and deny opportunities for the development of their full range of capabilities. In the United States, employers generally supported vocational education when it started in 1917 with the Smith-Hughes Act and continued over the years until the early 1980s when some leaders of the business community expressed concern that vocational programs were not giving students sufficient intellectual preparation for the emerging learning-intensive workplace. Evaluations that were done of the vocational programs found that the programs did not help students sufficiently to get jobs and as a result of these findings, the U.S. federal basic grant for vocational education required that only programs that integrated vocational and academic education were to be funded.

2.8 STUDENT PART-TIME WORK

According to Statistics Canada's Labour Market Activity Survey the number of hours worked by teenagers increased substantially during the 1980's. The survey found that one-third of students combine school and work and that 75% of employed teenagers work part-time. One of the conclusions from this study was that "students working a moderate number of hours are much less likely than others to drop out of school." In 1993, 40% of teenagers ages 15 to 19 had jobs and Alberta had the highest rate of student part-time employment of all provinces at 48%.

3. CANADIAN EXPERIENCE

Emerging in Canada is the notion that change in education must focus on greater access to learning opportunities, readiness for learning, and life long learning. The concept that various sectors in the community -- business/education/labour – would collaborate in the development and ongoing implementation of school-to-work transition opportunities for Canadian youth is a departure from traditional thinking. The roles of the various participants in these endeavours are evolving, and as yet have not been clearly articulated in the literature. To date, education in Canada has been slow to build training bridges from the world of school into the world of work.

3.1 EDUCATION SPENDING

On an international level, in 1989 the Organization for Economic Cooperation and Development (OECD) data show that public sector spending on education in Canada was 6.2% of GDP which placed Canada fifth behind Scandinavian countries and the Netherlands and ahead of the United States, the United Kingdom, France, West Germany, Switzerland and Japan.

TABLE 1
Public Sector Expenditure on Education as % of GDP, 1989

Norway	7.2
Sweden	7.1
Denmark	7.0
Netherlands	6.5
Canada	6.2
France	5.3
Switzerland	5.0
United Kingdom	5.0**
United States	4.8*
Japan	4.7
West Germany	4.1

* 1986
** 1987
*** 1988

Source: "A Lot to Learn: Education and Training in Canada", A Statement by the Economic Council of Canada, 1992. p. 32. Estimates by the Economic Council, based on data from the OECD

Canada leads OECD countries in the proportion of adults with some post-secondary education. Germany and Japan appear to be more successful and spend less. While Canadian per student spending as a percentage of GDP is generous -- as a nation we spend the equivalent of 2.6% of GDP each year on post-secondary education alone, it is difficult to say how much is too much. The demographics of Canada -- a small population spread over a huge land area -- have an upward impact on costs.

Interprovincial differences in educational costs are significant. Statistics Canada data from 1989-90 show that in Ontario, which accounted for over one-third of total Canadian expenditures on education in 1980-90, the largest share of its education spending went to the elementary and secondary levels; post-secondary vocational training received the smallest share. The provinces with the largest share of provincial spending going to vocational training at the post-secondary level were those in the Atlantic region. These differences reflect to some extent the variations in the provincial education structures.

3.2 SCHOOL LEAVERS

While Canada's rate of participation in education is high, almost three million Canadians have very limited literacy skills, another 4 million have some difficulty with every day reading tasks; and each year most of the 250,000 young people who leave high school for the labour market do so without further structured education or training. According to the 1994 report produced by Human Resources Development Canada "too many young people leave school prematurely and many of those who do drop out never acquire the basic skills and qualifications for a decent job." Close to one-third of Canadian students do not complete their secondary schooling, and while a significant proportion of secondary school graduates go to university, many drop out before completion of their studies.

3.3 SCHOOL YEAR

Compared to an average school year in Japan and Germany, the Canadian school year is considerably shorter. Over a period of ten years of compulsory school, Japanese and German children spend the equivalent of almost three additional years in school.

TABLE 2
Number of School Days/Year.

United States	180	
Ireland	180-184	
Canada	180-185	
United Kingdom	190	
France	220	
Germany	220 (240)	
Korea	220	1992 numbers
Japan	240 (242)	1992 numbers

Chart from Corporate Higher Education Forum--p. 13
Sources: IAEP (1988) *A World of Difference* and Clarkson Gordon (1989) *Tomorrow's Customers*.
Source: Learning Well...Living Well--Prosperity Secretariat, Government of Canada, 1992.

3.4 LACK OF COHERENCE IN EDUCATION AND THE LABOUR MARKET

On a ranking of major OECD countries using three sets of indicators -- education/labour/economy -- Canada was in the middle of a group of eighteen industrialized countries. Primarily, this position is reflective of a lack of coherence in education and training systems with the labour market and the economy. Another feature of the Canadian learning continuum is that there is considerable movement from the learning avenues to the labour market without mechanisms in place to ensure that labour market signals are clearly transmitted and correctly understood. Many young people experience haphazard transition from school to work, and adult learners are not prepared for the needs of the changing work place. Consequently, in the absence of clear signals from Canadian employers as to the skills, knowledge and attitudes required in today's work place those seeking to enter or re-enter the work force lack adequate information. To date there has not been concerted effort among business and education to actively cooperate in the transmission and the reception of information, and to move towards establishing effective partnerships to strengthen coherence.

3.5 EMPHASIS ON ACADEMIC CURRICULUM

The literature describes a widely held perspective that a fundamental shortcoming in Canada's education system is the excessively academic orientation of the typical secondary school curriculum. While the academic focus is considered appropriate for those who go on to post-secondary studies, it is failing to serve the needs of the 60-65% who do not. This majority group typically falls into two categories: drop out of school altogether due to lack of interest, lack of ability, or absence of employment prospects; or complete school with limited job skills and limited capacity to succeed in the labour market. Vocational preparation is generally not treated as a credible alternative to the academic stream in Canadian secondary schools, and the current Canadian apprenticeship system is considered to be limited in coverage and unresponsive to labour market needs.

Michael Porter in his 1991 independent research report "Canada at the Crossroads", submitted to the Business Council on National Issues of Canada and to the Minister of Industry, Science and Technology and International Trade, found that Canadian private sector employers had a weak commitment to ongoing skill training; industry involvement and cooperation with educational institutions was low; and in Canada there exists a strong social and cultural bias toward university educated, white-collar occupations with a widely held perception that technical and vocational schools are "second best".

3.6 ORGANIZATIONS INTERESTED IN SCHOOL-TO-WORK TRANSITIONS

Along with provincial education departments and significant numbers of school jurisdictions, some organizations in Canada have focused attention on the issues of school-to-work transition. One of these organizations is the Conference Board of Canada which has three related activities: the National Council on Education, the Corporate Council on Education, and an Annual Conference. They have identified purposes of business involvement in education as providing real-life learning opportunities for students and the achievement of mutually beneficial goals. The types of involvement they see encompass a variety of mechanisms, are wide ranging and include: job shadowing/monitoring/work experience/tutoring, etc. Others who have addressed their attention to the school-to-work transition include the Corporate Higher Education Forum and the Canadian Chamber of Commerce.

3.7 EMPLOYABILITY SKILLS PROFILE/ETHICAL GUIDELINES FOR BUSINESS-EDUCATION PARTNERSHIPS

Two relevant documents: Employability Skills Profile and Ethical Guidelines have been developed by the Corporate Council on Education and the Business-Education Partnerships Forum, respectively. The Employability Skills Profile outlines the critical skills required of the Canadian workforce. These skills fall into three categories: academic skills which include communication, thinking and learning; personal management skills which include positive attitudes and behaviours, responsibility, and adaptability; and teamwork skills which include the ability to work with others in order to achieve the best results. This profile of employability skills aligns with the general educational goal statements of the provinces and territories, and has been used in developing the new Alberta guidelines. The Ethical Guidelines for Business-Education Partnerships is a tool for partners to assist with ethical decision-making in creating, developing and maintaining sustainable business/education partnerships. The guidelines complement existing codes of ethics, practice and conduct.

The Canadian Labour Force Development Board proposes the notion of a "Learning Passport" which is an initiative to allow more effective transitions between different learning experiences, on the job and at various institutions. This passport would document learning experiences and academic and vocational credentials and would be recognized across the country by employers and learning institutions.

The literature identifies that in today's global economy, if Canada is to be internationally competitive, workers will have to have specialized skills and the importance of knowledge of practices in other countries is increasing. Canada lags in the breadth and scope of formal linkages between learning institutions and counterparts in other countries. In 1992 Canada hosted 63,000 foreign post-secondary students; 24,000 Canadians were studying abroad – over 19,000 of those in the U.S. In Europe, the Erasmus Program links colleges, universities and research institutes across the continent and facilitates the exchange of students, faculty and information.

3.8 FINDINGS FROM ECONOMIC COUNCIL OF CANADA, A LOT TO LEARN: EDUCATION AND TRAINING IN CANADA, 1992

The first comprehensive examination of the way primary and secondary schools and the training system in Canada prepare young people for employment was a statement produced by the Economic Council of Canada in 1992 "A Lot to Learn: Education and Training in Canada". Findings confirmed that education is cumulative and skills learned in early years provide a foundation for future success. This research was consistent with other evidence indicating a lack of coherence in the messages from employers, parents, and society generally to students and teachers, and this is most evident in the school-to-work transition.

Also, there is lack of clarity in the pathways from school-to-work in Canada which is in contrast to the experience of other industrial countries like Germany and Japan.

Findings also showed that education is not valued by large numbers of young Canadians, although the need for a strong education and training system has increased due to the escalation of work place skills requirements. The Economic Council determined that vocational programs are of great importance because of their direct implication for international competitiveness, and these programs play a critical role in developing coherence in the school-to-work transition. Signals from industry regarding skill requirements and education's ability to respond are particularly relevant with regard to vocational education. This literature identifies lack of coherence from secondary-school to the post-secondary apprenticeship stream and from vocational secondary school to colleges, and similarly between apprenticeship programs, colleges and universities. There is also a lot of haphazard movement between the labour market and the learning avenues. This research concludes that:

- Canada lacks institutional mechanisms to ensure that labour/market signals are clear to individuals and educational institutions;
- options for non-academic students have been neglected; and
- general disrepute of vocational programs is damaging.

3.9 EMPLOYMENT AND IMMIGRATION CANADA RESEARCH FINDINGS

A research paper by Employment and Immigration Canada, 1992, on secondary-school vocational education identified several concerns about vocational programs at the secondary school level in Canada. Every province except Newfoundland has vocational programs in secondary school, but only about 10% of Canadian students are enrolled in them. This study concluded that there is a poor image of Canadian secondary-school vocational programs because:

- programs are geared to high risk and/or low-achieving students;

- staff of vocational schools frequently do not have advanced formal qualifications;
- post-secondary institutions often do not accept vocational subjects as credits;
- formal links between secondary school/vocational programs/apprentice programs are uneven and incomplete;
- secondary school's success is often judged by how well students are prepared to enter University rather than the labour market;
- Canadian society ascribes a lower socio-economic status to blue-collar workers;
- guidance counsellors report that an estimated 95% of Grade 10 students aspire to university (reinforced by parents); and
- career counsellors are frequently ill-informed about the content and prospects of jobs.

3.10 APPRENTICESHIP SYSTEM

Reform of the Canadian apprenticeship system was called for in 1990 in the Ontario Premier's Council and the Canadian Labour Market and Productivity Centre's Task Force on Apprenticeship. Findings of this task force were that: provinces have developed training programs independently and there has not been consistency in program quality; certification does not confer instant recognition and widespread acceptance; and the Interprovincial Standards Program (known as the Red Seal program) established in 1959 to promote national standards has shortcomings. The number of trades granted Red Seals to more than 50% of their graduates has been few. While some 290 occupations in Canada are apprenticeable, fewer than one-third actually had registered apprentices in 1987. Coverage of the apprenticeship system is highly concentrated in traditional trades and a few low-skilled service occupations. The analysis of the task force suggested that little attempt is made to align the supply of apprentices with labour market demands. The following reforms were advocated by the task force:

1. integration of the responsibilities of the private sector and federal and provincial governments;

2. reform of funding arrangements for apprenticeship training;

3. promotion of national standards and mobility for those who complete an apprenticeship program; and

4. increased participation rate of women and other groups.

This research concluded that problems associated with apprenticeship generally fell into four categories:

1. **Lack of coherence.** This is indicated by inadequate transmission of clear signals by Canadian employers regarding expectations and skills needs, ineffective reception by the education and training systems of those needs, and inaction by partners in developing appropriate responses to those signals.

2. **Secondary school education.** The task force findings concluded that school systems failed to provide relevant and attractive vocational programs in part due to poor communication.

3. **Apprenticeship system itself.** Findings determined that the apprenticeship system requires a major overhaul in order to achieve broad occupational and industrial coverage, achieve coordination of standards, and respond to labour market demands.

4. In small firms, employer-based training is weak.

3.11 CAREER COUNSELLING

Findings from the literature reported that career counsellors have too broad a role -- dealing with psychological to academic to social problems; there is no certification or provincial standards; the function is rarely prominent in ministries of education; knowledge and understanding of industrial sectors was insufficient; and generally counsellors lacked labour market information. A conclusion drawn from the research is that partnerships could substantially improve the deficiencies currently existing through the prospect of improved communication between teachers and employers resulting in greatly enhanced mutual benefits.

3.12 PROSPERITY ACTION PLAN

The Government of Canada developed two documents to address prosperity initiatives. Generally these documents addressed the importance of partnerships among business/labour/education/and government. They described the importance of a well educated and highly trained workforce and the establishment of a learning culture with a focus on life-long learning. A Steering Group was put in place and after public input from across Canada, a report was presented in 1992: "Inventing Our Future: An Action Plan for Canada's Prosperity." Fifty-four recommendations for action were presented. Relevant to this review on school-to-work transition, recommendations included:

- Bring the world of work into schools:
    - ensure young people are ready to enter world of work when they leave school;
    - strengthen existing vocational and trades programs;
    - broaden apprenticeship arrangement;
    - expand number of cooperative education programs.
- Encourage secondary school completion:
    - develop and implement strategies in each community to ensure all youth complete secondary school.
- Introduce competence-based systems to cover all levels of education and training:
    - define success in learning in terms of demonstrated skills, knowledge and attitudes;
    - relate success to defined expectations and achievements of individuals;
    - develop appropriate measuring tools for assessment

    - inspire necessary changes in teaching methods and organization;
    - determine qualifications for admission to continued education and training;
    - establish a registry of skills, knowledge and achievements with national recognition.

- Develop set of indicators of system achievement used to assess student achievement relative to Canadian and international standards.

- Apply principles of continuous quality improvement to learning institutions:

    - make institutions more responsive and accountable;
    - identify client needs and satisfaction levels;
    - make decisions as much as possible at local level;
    - involve clients and staff in collaborative decision-making.

3.13 ROLE OF THE FEDERAL GOVERNMENT

Unlike most federal countries, Canada does not have a federal ministry of education. Education is a provincial responsibility, however, many argue that appropriate coordination mechanisms are needed to ensure that a pan-Canadian labour market is well served by its education systems across the country. Others advocate that national education and certification standards ensure coherence among education systems and the labour market as well as to ensure mobility. Recent developments with the Canadian Council of Ministers of Education have sought to achieve coordination through common curriculum, student evaluation procedures, and establishment of goals.

Some initiatives of the Federal Government include: in 1993 spending was $15,000,000.00 annually on cooperative education programs in secondary and post-secondary institutions; the Stay- in-School initiative ($296,000,000.00 over five years) funds projects to provide students with exposure to world of work through job shadowing, Adopt-a-School and business/education partnerships; Innovators in Schools initiative brings scientists and engineers into elementary and secondary classrooms; Canada Scholarships Program (in 1993 -- $106,000,000.00 over four years) encourages greater enrolment in science, math, engineering, etc.; and Canada Career Week encourages students to become familiar with the workplace.

Recent federal initiatives introduced in 1994 include two programs to assist the school-to-work transition: Youth Internship Program where the federal government works with provinces and territories/industry sector councils and communities to develop up to 20,000 internship places each year for young people ages 15 to 24; and Youth Service Canada which is an opportunity to get basic work experience by performing useful community service and when fully operational will involve 10,000 Canadian youth. A recent article, November 17, 1995, by Jennifer Lewington, Education Reporter for the Globe and Mail, reported that there are 120 school and community- based youth internship projects with 14,000 students across Canada, as well as 2,700 participants in sector-based projects with industry in such areas as tourism, electronics and the environment. Even with these initiatives a large gap still exists because 250,000 students each year leave school to enter the workforce without further training.

3.14 CANADA AS A MARKET MODEL

Canada and the United States are seen to rely on the principles of the "market model" with emphasis on individualism. The strength of this system is the high level of accessibility which opens up a wide range of opportunities for all. However, a drawback is presented with this model in that certain individuals may lack resources or influence to compete equally in the education system and the labour market. The literature points out that not all individuals left to their own devices are able to successfully complete the school-to-work transition.

3.15 PROVINCIAL INITIATIVES

Information from provinces generally provides descriptions of courses offered to students, expectations for outcomes, and performance measures. Some of these are very briefly described here to illustrate that some of the elements contained in these programs are similar to elements of successful practice in other countries; for example, a broader based skills requirement. Because programs like Career and Technology Studies (CTS) in Alberta are relatively new there is no indication to date as to their strengths and weaknesses.

In Alberta an important component of Alberta Education's three-year business plan is the involvement of business as partners in the development and delivery of employability and workplace skills for Alberta students. Underlying this initiative is the belief that with increased collaboration of business and education, students will have greater opportunity to acquire these necessary and important skills providing a seamless transition from school to work and effectively establishing the workplace as an extension of the classroom.

In Alberta it has been estimated that 60-65% of Grade 12 graduates do not go on to a post-secondary education immediately after high school. Alberta, like other Canadian provinces, sees the effects of the changing nature of work and the workplace. Part-time employment in Alberta has grown from a 12% share of total employment in 1975 to 17% in 1994 (Alberta Advanced Education and Career Development, May, 1995).

The Career and Technology Studies program is designed to provide students with opportunities to develop skills in a number of areas: daily living skills; career-planning skills; technology-related skills; employability skills; and to transfer and apply skills and learnings from other subject areas. The curriculum structure is organized into strands and modules. Strands generally relate to selected industry sectors which offer occupational opportunities either directly after high school completion or after further post-secondary education. The modules define what a student is expected to know by setting out module learner expectations, and evaluation is done of competency levels upon completion. Work experience programs involve cooperation between the school and community to further personal development, career planning, and occupational knowledge and skills. Two major components are work study which is integrated within a course and work experience which are separate courses for credit. Both of these components are expected to enhance a student's in-school studies with experiential learning on the job and students work under the supervision of a teacher and an employer.

From a 1995 Alberta Education Partnerships Survey Report sent to 72 Alberta school authorities, 67 respondents replied with 8 indicating that they had a policy in their school jurisdiction addressing school/business partnerships; 59 did not have a policy. Responsibility for school/business partnerships was assigned to an individual at the system level in 36 out of 67 jurisdictions. In a 1994 Financial Post poll of 588 school boards from across Canada, 20% indicated their board had a corporate partnership policy.

Calgary is leading the nation on a per capita basis in school business partnerships. Over half its 215 schools have formed partnerships with the goal to have all schools linked with business by 2000. Similar partnerships have been implemented and are being developed in other urban and rural boards. As illustration of an effective partnership endeavour, the Calgary Educational Partnership Foundation (CEPF) was formed in 1991 as an independent, non-profit organization established to support and provide access to resources in Calgary and area for elementary, junior and senior high school students and teachers. It is a partnership between the CEPF, five school districts and a variety of businesses and organizations. The Foundation has undertaken a number of initiatives which include: an employability skills pilot project, stay-in-school projects, student conferences, placement of teachers in curriculum-related businesses for a 4 to 6 week paid work experience, and a variety of resources are provided to schools. Another Alberta partnership initiative is the Partnerships in Education project -- CAREERS -- The Next Generation -- designed to provide opportunities in trades, technologies and non-university careers in communities throughout the province.

Business/education partnerships established in Alberta are seen to provide a number of benefits with the primary focus on the ultimate benefit of students: curriculum enhancement, the sharing of human resources, achievement of balance among interests, and discouragement of a strictly commercial approach.

In 1994 British Columbia announced a new skills training plan. A $19 million K-12 Skills Funds was established for the purpose of providing money to assist school jurisdictions with planning and implementing new initiatives. The plans must address the establishment of partnerships with all sectors of the community and must include strategies for community input and feedback mechanisms. Goals to be addressed under this initiative include: create or enhance career development programs; create or expand apprenticeships programs; emphasize applied curriculum; improve gender balance, equity, access and retention of students at risk; and expand access to the technological infrastructure.

As of September, 1995, British Columbia students from Grade 4 upward have a specific amount of time devoted to personal planning. All students from Grades 8 to 12 will be required to take a credit course on career and personal planning with a required work experience component in Grades 11 and 12.

Across the country issues of business/education partnerships are being addressed at local school and school board levels as well as provincially. As an example, in Ontario the Ottawa-Carleton Learning Foundation is a partnership of five boards of education, over 100 local businesses (including large corporations like Bell Canada, Bell Northern Research, and Petro Canada), local research institutes and post-secondary institutions, and relevant provincial ministries. The Learning Foundation administers the Career/Work Education Projects. This gives students vocational guidance and work experience, supplies teachers with information about industry, and orients school programs to skill requirements of employers.

Secondary School Workplace Apprenticeship (SSWAP) in Ontario schools enables senior students to earn credits towards a high school graduation diploma while training as a registered apprentice. In Quebec the SSWAP is attempting to provide direct linkages between schools and regular apprenticeship.

Vocational education reforms in Quebec involve review of program effectiveness and efforts to increase enrollments in vocational programs through improving image and colleges have seen expanded enrolment.

Commencing in 1969, over a twelve-year period, the Canadian comparative, longitudinal study of Eastside, Canada compared a sample of working class youth involved in an intervention program in downtown "Eastside" with a middle class control sample in "Northend", beginning in Grade 8 and continuing into adulthood. At young adulthood intervention program benefits, particularly to young men, were still evident in the action group. Work experience in the project contributed to youth going further in school and having a smoother school-to-work transition than most in the control group.

4. UNITED STATES EXPERIENCE

This portion of the review considers the United States experience in the context of current practice and research which endeavours to address the issues of school-to-work transition for American youth. The literature and research related to the U.S. experience is more extensive and comprehensive than Canadian literature. Because of the striking similarities of issues around this topic that are currently being grappled with in both Canada and the U.S. as well as similarities in the history and experience in addressing school-to-work transition, it is appropriate to study the U.S. experience with a view to examining how it might be relevant within a Canadian, and most particularly an Alberta setting.

4.1 BACKGROUND WITHIN THE CONTEXT OF FEDERAL LEGISLATION AND INITIATIVES

Vocational education in the United States has existed as a distinct course of study since the late 19th century. Federal vocational education policy remained virtually the same until 1963 with the passing of the Vocational Education Act which increased federal support for vocational education and encouraged development of area vocational schools. The Carl D. Perkins Vocational Education Act of 1984 marked the beginning of a major effort to focus federal policy more effectively, and subsequently the 1990 Carl D. Perkins Vocational and Applied Technology Education Act further focused and clarified federal policy which promoted four major objectives:

1. targeting all federal funds on secondary and post-secondary recipients with high concentrations on economically disadvantaged and disabled students;

2. promoting integration of academic and vocational education;

3. encouraging development of tech-prep programs that linked secondary and post-secondary offerings; and

4. requiring development of accountability systems of performance measures and standards.

The School-to-Work Opportunities Act of 1994 aims to provide the catalyst for a school-to-work system in the U.S. It contains four principles or required key elements that must be in place in programs in order to receive federal support. These elements are central to improving the system of school-to-work transition and include:

1. **Creation of a sustained structured program of study integrating academic and vocational instruction.** A key feature is a structured program with clearly marked paths of education and work combining academic and vocational instruction, using work as the context for the application of knowledge and skills. This component has the potential to improve student learning in academic subjects by providing practical context that gives meaning to theories and abstract information, and to enhance the intellectual content of vocational subjects. Combining the two curricula is a defining characteristic of career academies and is usually present in Tech Prep and Youth Apprenticeship. Some school-based enterprises apply and develop ideas from both vocational and academic subjects but most are vocational based. Currently at the secondary level, co-op education is usually reserved for vocational students. Creating coherent curriculum which ties several courses together over a period of several years is a major undertaking.

2. **Integration of classroom instruction with work-based learning.** This is seen to be a careful coordination of school curricula and work experience and includes a structured work-based learning experience which provides the practical reality of the school-based curriculum. Integration of classroom-based and work-based learning is the essence of apprenticeship. In the U.S. formal apprenticeship students are typically in their late twenties or older. Apprenticeships are generally not open to high school students. This has driven the attempts to create new "youth apprenticeships", "career pathways", or "career majors". Prior to these initiatives, co-op education was the most closely integrated work-based and school-based learning.

   Both apprenticeship and co-op education offer paid employment linked to students' schoolwork, and students' learning is organized on the job by means of written training plans and written agreements with employers to provide necessary supervision and instruction. School-based enterprises provide structured learning experience in the workplace (usually school) and students are not paid. Career academies arrange paid jobs for students related to their field of study but there are usually no written agreements or training plans. In school-to-apprenticeship programs, structured work-based learning would usually not begin until after high school graduation. Some individual Tech Prep programs may include structured learning in the workplace, however, this is not an integral part of the Tech Prep model.

In order to achieve success in these new initiatives, a major question to be addressed is whether sufficient numbers of employers are willing to make high quality work-based learning opportunities available to high school students. With the current economic and job market realities this poses some challenges.

Articulation with full range of post-secondary opportunities. The implication of this principle is that curriculum choices in high school would not curtail future opportunities. This linkage provides access to careers which require higher education and prevents the stigma of school-to-work programs as an option only for students who lack ability or ambition. Youth apprenticeship emphasizes this link and it is a defining feature of Tech Prep. Co-op education and school-based enterprise at the secondary level have tended not to be college-oriented because they have been tied to a traditional vocational curriculum. Many new youth apprenticeship programs are also combining work-based learning with a Tech Prep 2 + 2 curriculum leading from high school to a two-year college.

Among American high school students one-half or more aspire to attend a four-year college or university. In 1992, 63% of high school graduating students went directly to colleges or universities. A significant proportion of American young people, however -- an estimated 75% -- do not graduate from four-year college or university.

An important consideration in this principle is whether linking secondary and post-secondary education means that new school-to-work opportunities will lead to two-year or also to four-year colleges. Most Tech Prep programs link high schools with two-year colleges only, and these are unlikely to attract high school students who want bachelor's degrees. If these students reject school-to-work programs, they could acquire the second-rate image problem which has traditionally been difficult for vocational education. A poor image of these programs may have other ramifications including: difficulties attracting qualified teachers; employers' reluctance to provide training placements; and the "dumping ground" stigma where programs are seen to be for students with poor performance and low expectations.

The results of adhering to the key principles of school-to-work programs and ensuring that the required elements are in place, are seen to lead to a system with enhanced educational and work opportunities for all students.

Collaboration between education and employers is a key and critical component if the principles are adhered to in the improvement of school-to-work transition. The literature asserts that there are still the following questions to be addressed:

- What are the appropriate areas in which schools and employers seek to do things together?
- Is it the employers' responsibility to teach necessary skills?
- Do the employers only provide opportunities to apply the skills?
- Who decides what the student needs to know?
- How important is that knowledge relative to other knowledge?
- Would that knowledge contribute to a greater understanding and improved communication among other occupations in the same industry sector?

While the legislation related to school-to-work transition is a federal initiative, there is little federal money for its implementation and its proponents view the available funding as seed money. Currently in the U.S. 98% of high school students take at least one vocational education course before graduating; 90% take at least one occupationally specific course; 75% of academic students take at least one occupationally specific course; lower achieving students and students from lower socio-economic backgrounds take more occupationally specific courses.

4.2 U.S. NATIONAL STUDIES AND COMMISSIONS

In the U.S. since 1906 there have been sixteen national studies or commissions -- an average of one every five years -- charged with assessing educational aims of vocational education and its implications for social, employment and economic development policy. The findings and recommendations of these efforts are remarkably similar and consistent. Conclusions from this literature include the following:

- vocational programs focus too narrowly on specific occupations;
- vocational education overemphasizes narrow occupational skills to the exclusion of more general academic knowledge; and
- programs function in isolation from the rest of education.

The U.S. has made little progress in these areas. Findings describe the reasons for this lack of progress and they include:

- absence of a clear alternative framework for restructuring the high school curriculum to include a broader focus;
- successful school-to-work initiatives depend on transforming both vocational and academic education; and
- the U.S. is a nation that has not been dedicated to workforce preparation.

4.3 YOUTH STUDIES

The National Longitudinal Survey of Youth reveals that between the ages of 18 to 27 the average high school graduate who did not enroll in post-secondary education held nearly six different jobs and experienced four to five periods of unemployment. The degree of job instability among young people is exceptionally high in the U.S. – these people continue to flounder in the labour market longer than their counterparts in other countries, and many do not succeed in finding steady jobs even by age forty. The employment prospects for male high school graduates grew worse in the 1980s with a reduction of available manufacturing jobs.

Besides high unemployment, students right out of high school experienced reduced earnings in the 1980s compared to the 1970s, despite smaller number of youth in the labour market. U.S. Department of Labor, Bureau of Labor Statistics, 1993 showed that real earnings drop was steepest among younger workers. The new federal initiatives in school-to-work are intended to prevent this human resource waste. A study from the Employment Policies Institute (EPI) Foundation, using information on 2,716 people ages 16 to 19 collected in 1979 and updated yearly by the National Longitudinal Survey of Youth, shows that the short-term advantages of after-school work shown in previous research seem to extend into adulthood. This builds on the findings of a study which found that students who work while in school are likely to find stable, lasting employment, and are more likely than others to be employed twelve years later.

Evidence reported in September, 1995 from the National Longitudinal Survey of Youth describing the effects of high school work and the experience a decade later, indicated that available research provides no clear answer to the question as to whether part-time work during high school is a good idea or not. The results showed that possible negative effects on schooling are offset to some degree by possible positive effects on employment and income. It is not clear whether any of these effects persists for longer than a few years.

There is lack of evidence about the effects of comprehensive school-to-work systems, and when programs are found to have positive effects, it is difficult to isolate the factors due to the complexity of the programs themselves. Evaluations to date of five programs have found positive effects on students' school performance and retention but there has not been good evaluation of effects on subsequent employment. There has been some research on implementation of Tech Prep but effects on students are not conclusive.

Numerous studies have been done on programs for young people not attending school, for example the Job Corps. No evaluations have found any program to be effective in increasing the earnings of out-of-school youth.

4.4 NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION

In the U.S. the National Center for Research in Vocational Education by legislative requirement annually prepares a study on research conducted on approaches leading to effective articulation for the education-to-work transition. Co-op education is the most common and the most established of school-and-work programs. Youth apprenticeship in the U.S. is spreading. Often overlooked is school-based enterprise. School-and-work programs in high schools and secondary vocational centres include:

1. **Co-operative education.** This has been practiced in the U.S. for over 70 years, and has mainly been used in high schools as part of vocational education. It involves students in paid work related to their field of study. Research on these programs indicate that co-op education succeeds in creating a strong connection between school and work and improves student attitudes towards both. Findings also indicate that students generally do not obtain higher earnings after high school leaving unless they continue to work for their co-op employer. The literature suggests that a reason for this is that there is no recognized certification component for this form of program, with the implication being that creation of skill standards for specific occupations and industries could potentially convert co-op experience into higher earnings.

   The few evaluations that have been done in two-year American colleges suggest results similar to co-op education in high schools. These two-year colleges have played a substantial role in the U.S. in providing the classroom component of traditional apprenticeship programs and these colleges are beginning to be involved in youth apprenticeship.

2. **Youth apprenticeship.** This program, like co-op education, links high school with structured work experience and attempts to create clearer pathways to post-secondary education as well as providing occupational certification. As this program is relatively new, to date there is little research evidence.

3. **School-based enterprise.** This program involves students in producing goods or services for sale or use to others outside the education system. Evidence suggests that this type of program may provide similar benefits to students as working in a non-school enterprise and may be more conducive to learning as school- based enterprises exist for educational purposes. There has been no systematic evaluation of these programs.

4. **Other.** Many high school students are employed in jobs unsupervised by schools and these students vastly outnumber those involved in supervised work experience. Most youth in the

United States begin working at paid jobs while in high school, and these jobs typically are not connected to their studies or career goals. After leaving school with or without a diploma most young people spend years in periods of unemployment. An unanswered question is whether providing some school supervision for jobs that are not currently supervised by schools would mitigate some of the negative relationship between working and performance in school.

Other current research findings of the Center that are of particular interest in this review show that:

- students who work during high school obtain higher earnings in the first few years after leaving high school;
- students who work only a moderate number of hours per week have been found to perform better in school than those who do not work at all;
- students who work more hours per week perform less well in high school and obtain less post-secondary education;
- students who complete two-year college diplomas on average receive significantly greater earnings than students with high school diplomas only; and
- the payoff in terms of earnings is greater when vocational graduates find work related to their field of training.

A critical issue addressed in the literature is whether to design these school-to-work systems only for students who are not expected to attend college, or to include those students who may go on to a four-year college or university. If the latter route is chosen, the stigma of vocational education is reduced, and students' future options are left open; however, the complexity of designing new school-based curriculum and developing work-based learning arrangements is enhanced.

The literature posits that the success of a school-to-work program cannot be judged only by attainment of a full-time job, rather the transition should be seen as a process over many years. A measure of a successful school-to-work program means that youth are able to find and keep the kinds of jobs they want, possibly with continued or intermittent schooling and training over the period of their work life. A key element of many school-to-work programs is the combination of school and work during the same time period. This serves two purposes:

1. assists youth to learn skills and knowledge to qualify for a full-time job; and

2. gives them experience of using work to foster their own learning and contributes to long term growth and ability to adapt to change.

4.5 CO-OP EDUCATION

The 1990 Perkins Amendments define the essential ingredients of co-op education as:

- a method of instruction of vocational education for individuals who through written cooperative arrangements between the school and employers receive instruction, including required academic courses and related vocational instruction by alternating study in school with a job in any occupational field;

- this instruction is planned and supervised by the school and employers so that each contributes to the student's education and to his/her employability; and

- work periods and school attendance may be on alternative half days, full days, weeks, or other periods of time in fulfilling co-op program.

While this program has been recognized in the U.S. since 1917 there has been a seeming lack of interest accompanied by a lack of program evaluation, particularly at the high school level. The U.S. General Accounting Office (GAO) 1991 study estimated the number of high school students currently in co-op as less than 4% of total high school enrollment. A National Assessment of Vocational Education (NAVE) survey further indicates that another 1.8% of students in Grades 9 to 12 were participating in other school-based work experience. These figures together indicate that approximately 5% of students in Grades 9 to 12 were in programs that were either called co-op or had similar identifying features. The GAO survey underscored the lack of uniform certification for co-op completers. The U.S. national efforts to create skill standards for specific occupations and industries should help provide targets for which co-op programs can aim. Establishing such standards might resolve the research findings that reveal co-op succeeds in creating a strong connection between school and work but former co-op students generally do not obtain any significant advantage in employment or earnings in the first few years after high school.

The GAO has described the following elements of good practice in co-op education:

1. a written training agreement between school and each employer setting out expectations for each party;

2. a written training plan for each student whereby:

   - learning objectives may be linked to vocational or academic courses;
   - student evaluation will be on stated objectives;
   - evaluators will be determined; and
   - the agreements will be signed by the student, job supervisor, co-op coordinator, sometimes parent.

3. the Co-op coordinator may be a teacher in a related class with responsibility for students only in that field, and

   - may have special training and certification as co-op specialist; and
   - is responsible for finding job placements/identifying suitable students/negotiating training plans for students/monitoring students/offering related instruction.

In a 1992 survey by NAVE it was shown that in about 50% of the co-op programs the coordinators find jobs for students. It was also indicated from this survey that the same list of features of co-op are present in two other types of work experience:

1. **in-field work experience (IFWE).** This program allows students to earn school credit in conjunction with paid or unpaid employment in their vocational field of study but does not qualify as co-op education.

2. **other work experience (OWE).** This program allows students to earn school credit in conjunction with paid or unpaid employment outside their vocational field of study.

The differences between these two programs and co-op are whether students are required to complete separate courses of related instruction and whether coordinators supervise only in their own field.

Summary of Research Findings on Co-op Education

Findings indicate that:

- co-op students did not experience higher rates of labour force participation, employment or wages;
- co-op students are more positive about school and its relationship to employment, but they are no more successful than other students in finding work or earning high wages; and
- analysis of three major national longitudinal surveys has failed to find positive economic outcomes for high school co-op students.

Implications from the research indicate that creating a stronger connection between school and work for high school students does not necessarily improve their prospects in the labour market after high school. These results raise a flag for proponents of current efforts to expand school-to- work programs. The literature indicates that a possible reason why co-op education students apparently do not obtain any significant advantage in the labour market in the first few years after high school is that they do not receive any formal certification that is recognized by other employers. A Colorado data test found that former co-op students who continued working for their co-op employers did experience significantly higher earnings than other students who continued working for their employers; among students who changed employers, co-op students had no advantage.

In a study done to measure qualitative job characteristics it was found that co-op students are more likely than non-co-op students to report that:

1. their work provides learning opportunities;
2. they use reading and writing as well as other things learned in school in their job;
3. they have contact with adults on the job;
4. they have good relationships with supervisors;
5. the job is career-related; and
6. work is meaningful and motivating.

Two other studies found that in surveying secondary students six months after high school leaving and in comparing co-op to non-co-op, co-op students were more likely to report working as their primary activity (53% vs 40%) but less likely to report post-secondary education (36% vs 47%). Other studies showed similar results which were consistent with the fact that a large proportion of co-op students identified themselves as being in the vocational track in high school. Compared to other students, co-op students came from lower socio-economic backgrounds and had lower scores on the HSB test of vocabulary, reading and math. These studies were not designed to measure the extent to which co-op adds to or detracts from students' subsequent success in school or work.

Strengths and Weaknesses of Studies

It is possible that existing studies have underestimated effects of co-op participation on labour market outcomes. Strengths of the studies include use of longitudinal data and multivariate analysis that controlled for measured characteristics of students in trying to estimate the separate effect of participation in co-op. Limitations of the studies include the failure to correct for possible bias associated with unobserved variables; most of the studies lumped together co-op and other school supervised work experience although co-op is more rigorous; and failure to account for variation in quality of students' jobs as the assumption has been that differences among co-op jobs are negligible compared to differences between co-op and non-co-op jobs.

4.6 YOUTH APPRENTICESHIP

In the U.S. recent attempts have been made to revitalize the apprenticeship concept to bridge the gap between high school, post-secondary education and work. The definition of this program in the U.S. is still evolving. In the more detailed version is the notion of providing structured, work- based learning for high school students who are too young to qualify for a small number of formal, registered apprenticeship programs in the U.S. These programs are consistent with the School-to- Work Opportunities Act of 1994.

Jobs for the Future is a leading organization in the development of youth apprenticeship in the U.S. This organization in 1993 identified the most important elements of Youth Apprenticeship:

1. employers provide paid work experience and guided worksite learning;
2. schools integrate vocational academic learning;
3. school and workplace learning are coordinated and integrated;
4. programs articulate high school and post-secondary learning and at least two-year programs,
5. students who complete programs receive widely recognized credentials of both occupational and academic skill mastery; and
6. programs are governed by broad coalitions of institutional partners.

This concept of youth apprenticeship includes preparation for post-secondary education as well as for work. This is in contrast to earlier school-to-apprenticeship models designed to prepare students to enter formal registered apprenticeships.

The literature identified a number of potential benefits of Youth Apprenticeship which include:

1. young students are provided with early exposure to world of work;
2. opportunities for students to broaden education in applied settings with caring adults;

3. potential for employers to have impact on developing a quality workforce;

4. opportunities for schools to bridge the transition from school to work; and

5. development of responsible citizens/less crime/fewer dropouts/less substance abuse.

The National Alliance of Business in 1992 published "An Employer's Guide to Youth Apprenticeship" which provides a list similar to the above along with a list of roles for the key players. The literature describes a number of program models which incorporate a variety of concepts including the application of the apprenticeship concept to traditionally non-apprenticeship occupations; three-year programs where the time spent on the job would increase up to 75% in the last year; and a model characterized by degree of independence from high school.

4.6.1 Description of Youth Apprenticeship Initiatives

These initiatives are sponsored by the Department of Labor through demonstration grants (10 sites); Jobs for the Future (6 sites); some jointly (4 sites) and others independently (34 sites). (1994 information)

Several states have recently initiated efforts to expand Youth Apprenticeship programs. Enrollment increases in these programs are anticipated due to the support through the School to Work Opportunities Act. There is a broad range of programs and they generally have targeted industries, employer contacts, and a plan for students' training. The industries vary widely and include: aerospace, metalworking, health care, machining, electronics and hospitality.

The literature identifies a number of programs of which the following are examples that provide insight into current United States initiatives:

1. **McDonald's YA program.** As of 1994 this program is in the planning stages in Indianapolis, Chicago and Detroit as a four-year business management program with specialization in food service management.

2. **Project ProTech, Boston, MA.** This program began in 1991 as a YA program in allied health careers. It combines classroom learning from four high schools, clinical experiences in Boston's hospitals, and continuation to include at least two years of post-secondary education. The objective is to train students through to be non-college bound in high skill areas related to health care field. A formative evaluation of this project was provided in 1993 by Jobs for Future which summarized first-year findings in six areas: partnership/learning through work/integrating school and work/unifying high school and post-secondary training/student selection and outcomes/achieving a cost-effective design. The findings identified the following:

a) the complexity of institutional partnerships;

b) attention should be given to schools and hospitals as equal partners;

c) clinical instruction most effective and should be used to support curriculum;

d) the work-based component successful; quality of job placements varied;

e) clinical instruction required combination of supervision, support, development of learning plan as well as training for staff;

f) the integration of vocational and academic curriculum limited;

g) importance of seamless transition from high school to college which means a new set of partnerships and curriculum alignment;

h) student performance varied considerably;

i) students who participated all year and had quality job placements appeared to develop greater confidence and showed increase in motivation for performance;

j) students who entered with poor academic histories continued to have difficulty; and

k) program designers concluded this model would not be accessible to students with severe academic and behaviour problems.

The conclusion was that nearly 50% of high school students in Boston would not be able to participate in a program of this kind due to the requirements for academic performance.

3. **Broome County YA Demonstration Project, Broome County, New York.** This program involves Cornell University and started in 1991 with twenty-two Grade 11 students enrolled in apprenticeships in health care, manufacturing and engineering technology and administrative and office technology. Apprenticeships were provided by four employers and in the second year two were added along with twenty more students. The program recruits students whose GPA is above C and are not considered drop out risks. The model used is referred to a Tech Prep option and students spend ten to twenty hours per week at work with most of the work done after school and full-time during the summer.

   The project resembles traditional co-op education program except that the work is more carefully planned than in most co-op programs. In the second year of the program a special projects component was added which extended academic activities where students explore in depth an important work issue. The project is competency based and intended to include performance based assessments. Work-based learning is organized around the attainment of specific person, social and technical competencies and continues through two years of community college. The students are initially paid at minimum wage which is expected to increase each year. Research has been a key part of the project from its inception; both for monitoring purposes and for continuous project improvement.

4. **Pennsylvania's Multi-Site YA Program.** This program started in 1991 as an initiative from the State Department of Commerce at a pilot site with 12 students. Presently (1994) 350 students participate at sixteen sites. These students are placed with 148

employers who are mainly small tool and die makers and machinery manufacturers. Features of the program include:

- recruitment open to all students;
- schoolwork requirements vary locally although the classroom instruction is usually over three days with the other two devoted to worksite training with the worksite time increasing gradually over four years;
- teaching is done by both vocational and academic teachers using an expanded and innovative curriculum;
- each student is assigned a mentor and a journeyperson;
- students are paid a stipend by the employer;
- progress is assessed on demonstrated competencies;
- regional employer groups developed training matrices for worksite curriculum; and
- the training matrix covers approximately 5,050 hours of training.

Program designers are developing a curriculum that will provide young people with a portfolio of marketable skills and competencies across a broad cluster -- manufacturing, engineering along with support that will continue to grow throughout students' working careers. The broad cluster concept reflects the way business is restructuring the workplace and provides guidance for how secondary schools should focus their curricula in line with the domain-specific skills and knowledge gained in the workplace and in post-secondary institutions.

5. **State of Wisconsin YA Program.** Wisconsin's 1991 YA Law created a program and designated the State's Department of Industry, Labor and Human Relations to carry out related activities in cooperation with the Department of Public Instruction and the Wisconsin Board of Vocational, Technical, and Adult Education. Wisconsin has the oldest registered apprenticeship system in the U.S., and much of its YA model is based on

elements of a traditional program. Expected outcomes for students include that they enter work world at higher rate of pay; they receive advanced standing (up to 1 1/2 years) in a registered adult apprenticeship; they receive advanced standing in a technical college; and they master a curriculum that meets admission requirements for the university system.

Implementation of YA began in 1992 with two programs, both in the printing industry. One site includes one school district, one employer, and twelve students. The students spend four hours in school and four hours in a work-based learning site, and for two days each week one and a half hours is spent in coursework at a technical college. These students work full-time during the summer. The other site included four school districts in a consortium arrangement with four employers. There are nine students in the program and they rotate among the four employers. All technical and academic courses are taken at a technical college with academic teachers coming from the high school. Eight hours a day, two days a week are spent in school with the rest of week at work site. In 1993 a finance curriculum was to be developed and implemented with the help of local banks, savings and loans institutions and credit unions. Other programs in utilities industry, hospitality, and motor vehicle equipment sales was scheduled to start in 1994. Features of the Wisconsin YA Program include:

- eligibility requirements where students must pass 10th grade Gateway Assessment Exam and complete approved industry-specific survey course taken by first term students,
- students enter into agreement with school, employer and parents, and
- agreement approved by Wisconsin Department of Industry, Labor and Human Relations which is responsible for approving agreements in registered apprenticeship system.

6. **Arkansas YA Initiative.** This program began in 1992 with technical assistance from Jobs for the Future with approximately 70 firms preparing apprenticeships for 150 students in health services, industrial machinery maintenance and repair, small

retail management, metalwork, and food service production and management. Features of the Arkansas program include:

- firms receive incentive for cooperation in the form of tax breaks;
- cooperation established with firms headquartered in Arkansas -- e.g. WalMart, Tyson;
- apprentices start at minimum wage with advancement possibilities;
- firms not expected to hire apprentices at end of training;
- program set up to increase movement of apprentices from one employer to another; and
- main responsibility for supervision is with Vocational Technical Education Division of the Arkansas Department of Education in collaboration with the Arkansas Apprenticeship Coordinating Steering Committee.

7. **Other Innovative Programs.**

a) The Academy of Finance was initiated in 1982 in four New York City schools and this program focuses on on-the-job training and classroom instruction in finance and economics for junior and senior high school students. Over a two-year period students attend seminars and work as paid interns in the financial services industry.

b) Project Bridge enables Polaroid employees to switch careers to become high school teachers of math and science. Employees receive required teacher training at various universities at the firm's expense and teachers are encouraged to take sabbaticals to work with Polaroid and learn about the industrial applications of math and science.

4.6.2 Summary of Findings Related to Youth Apprenticeship

Initiatives in Youth Apprenticeship are still fairly new and no extensive formal evaluations have been done. Issues that have emerged from discussions with those directly involved in the programs are:

1. **The name "youth apprenticeship" is an issue.** For many the perception of "apprenticeship" is not related to academic education, and it is difficult to advocate apprenticeships as a possible means of transition to college or university. The literature suggests that YA be developed in attractive, high prestige occupations that would promote a favorable image.

2. **Important to take into account extent of flexibility necessary for high schools in order to accommodate demands of YA programs.** Evidence indicates that few teachers are familiar with local, regional and national job requirements; more flexible schedules and methods will need to be adopted to meet needs of both students and employers.

3. **Concerns for employers include labour issues, child labour laws and hazardous occupations and safety concerns.** There is a widespread view that union resistance due to concerns about displacement of older workers or undermining of wage levels has been a limiting factor in the implementation of YA programs. In order to mitigate this, it is essential that labour unions are represented in the process of developing YA programs. Another important issue is that of providing incentives to employers to encourage their participation. Some states are providing tax credits, however this is being questioned in some circles, particularly if it is seen that the benefits of these programs accrue mostly to apprentices and employers. In the U.S. there is a history of subsidized training being associated with disadvantaged workers whom employers often consider less desirable and this history has the potential to devalue the students who choose this program.

   A long term commitment from employers is critical to the YA program. In this regard some industries may not be appropriate due to high turnover at entry level positions and short career ladders. Growing employment demand is also seen as necessary to ensure that businesses will participate in programs

> because of self-interest, not forced commitment. State-level planning and coordination can assist in targeting programs to growing industries and can assist with issues such as worker compensation, union concerns, child labour laws, and portability of credentials although local implementation is necessary to match employers and students.

In the U.S. Youth Apprenticeship can be considered on a continuum whereby programs prepare students for registered apprenticeships on one end and YA as a form of pedagogy on the other end. Each of the above described programs offers a different balance of specific skill development and academic development with the Wisconsin program demonstrating a model closest to a traditional apprenticeship, the Pennsylvania model closely follows, Broome County which combines vocational and academic education with a clear intent of continuing education beyond high school is in the center of the continuum, and the ProTech and Arkansas follow closely. These last three seek to incorporate the evolving Tech Prep 2 + 2 program. All the illustrated programs have to face the issue of portability of credentials.

Throughout the literature the argument is made that a system of work-based learning, whatever the program, needs to provide for greater involvement of employers, and long range planning is recommended to develop an appropriate set of institutions and incentive systems.

4.7 SCHOOL-BASED ENTERPRISE

In high schools and two-year colleges, activities that range from Junior Achievement activities to building houses, running restaurants, managing retail stores, etc. fall into the category of school- based enterprise. These activities have been associated mostly with vocational education where students are given the opportunity to apply knowledge and skills taught in the classroom. In 1992 the NAVE survey found that 19% of secondary schools in the U.S. were operating some kind of school-based enterprise. There has never been any federal U.S. initiatives to promote such activities. While a number of U.S. school-based enterprises have been described in the literature there do not appear to have been any quantitative evaluations of what students have learned from these programs.

Studies have found positive association between amount of high school work experience and employment or earnings a few years later. There is some evidence that jobs which provide greater opportunity for students to use and develop their skills have more positive effects. Participants in various forms of school-supervised work experience are vastly outnumbered by millions of U.S. students who hold paid jobs during the school year without school supervision, an important consideration when examining the effects of school-to-work transition.

4.8 MENTORING PROGRAMS

These programs are defined generally as a relationship between a young person and an adult where the adult offers support and guidance. Many mentoring programs in the U.S. exist as components of larger school-to-work efforts. There is little research evidence to support the success of mentoring for youth. Mentorship programs designed to assist in the school-to-work transition are becoming more popular and advantages are seen in that they are relatively low cost, there is positive intervention in the lives of young people, and they are characterized by simplicity and flexibility.

4.9 ELECTRONIC FORUM INITIATIVES

The following are identified as electronic discussion forums on school-to-work transitions:

1. **STWNET.** This is a U.S. electronic discussion forum on School-to-Work (STW) and is a project of Cleveland Youth Fair Chance (YFC) funded by the U.S. Department of Labor. This project is a partnership of Youth Opportunities Limited, Inc. (YOU), Education Development Centre, Inc. (EDC) and Cleveland Public Schools and can be accessed through subscription.

2. **VOCNET.** This is an electronic discussion group for people interested in vocational education managed by the National Centre for Research in Vocational Education out of the University of California at Berkeley.

4.10 FORMULATING EFFECTIVE PARTNERSHIPS

The literature outlines at least three motives for business involvement in schools: personal interests of top executives, corporate interests, and altruism. Partnership structures are varied and include a variety of configurations: one school and one partner; one partner nation-wide; a group of partners community-wide; a group of partners nation-wide. Partnership goals are as varied as the structures and include everything from enhancing employability skills to providing equipment.

The National Alliance of Business has defined five levels of operation used by the private sector. These are:

1. **Level 1. Policy.** These partnerships are collaborative efforts among business/schools/government that shape public and political debate about schools, bring about changes in legislation and governance, and generally have an impact on the overall direction of the educational system.

2. **Level 2. Partners in systemic educational improvements.** In these partnerships leaders in each of business/education/ community sectors identify needed reforms in the educational system and then work over a long term to achieve results.

3. **Level 3. Partners in management.** These partnerships are where business provides management assistance and support to schools in a number of areas such as purchasing, labour relations, facilities, etc.

4. **Level 4. Partners in teaching training and development.** These partnerships provide professional development opportunities to teachers and counsellors in a variety of areas including labour market information.

5. **Level 5. Partners in the classroom.** This type of partnership is where volunteers bring their expertise into the classroom or bring the classroom into the business.

The literature raises the issue of longevity and continuity of business/education partnerships as an important one for consideration, particularly if the partnership is dependent upon the availability of financial resources. Evidence is that increasing numbers of business/education endeavours point to creative approaches that call for significant commitments from all parties. This high level of commitment calls for collaborative models which emphasize relationships of mutual benefit. With this perspective a model proposed in the literature bases high level partnerships on two dimensions: strategic dimension -- with a mission, policy, goals, strategic planning and shared resources; and operational dimension -- with a partnership structure, administration and leadership, and evaluation and follow up. The strategic dimension is concerned with the long term decision-making process in the context of collaboration and the operational dimension is concerned with the implementation of the collaborative effort. The literature concludes that educational purposes of the partnership efforts should be the key element.

4.11 SECRETARY'S COMMISSION ON ACHIEVING NECESSARY SKILLS (SCANS)

The Secretary's Commission on Achieving Necessary Skills was created by the Secretary of Labor in May 1990 to examine the demand of the workplace and determine if young people could meet entry level requirements of the workplace. The Commission is a public-private collaboration and two years were spent identifying and formulating a framework for categorizing entry level competencies. The framework specifies three broad foundation skill areas: basic academic skills, thinking skills, and personal qualities; and five categories of workplace competencies: use of resources, interpersonal skills, information, systems, and technology. The Commission advocated that these competencies be taught in all schools and that young people receive certificates documenting mastery of these skills. The literature reviewed determined that there has been limited experimentation with trying to teach and assess SCANS competencies.

4.12 RECONSTRUCTING URBAN SCHOOLS WITH WORK-CENTERED EDUCATION

The literature describes some particular initiatives with regard to U.S. urban schools that are of interest in this review. For reconstructing urban education the most thorough efforts to integrate academic and vocational education are seen to be the most valuable. Some of the different models that are currently in existence include:

1. **Academies.** These are schools within schools and any broad group of occupations could serve as the basis for an academy. Typically four teachers in math, English, science, and the vocational subject that is the core of the academy would collaborate. Other subjects -- social studies, foreign languages, etc. are taken in regular high school outside the academy. A key element in this approach is to have a group of teachers working with one group of students and with each other over a period of years. Because each academy is focused on a cluster of occupations, it becomes easy and natural to integrate vocationally relevant material.

2. **Occupational Magnet Schools.** These schools emphasize preparation for clusters of related vocations e.g. high schools for business careers, agricultural sciences, etc. These are similar to academies except the scale of this model is much larger.

3. **Occupational clusters or majors.** In this approach students choose clusters from related occupations. The cluster then structures curriculum for the remaining years of high school. These are like academies except every student elects a cluster so these schools in effect have a series of academies. Teachers are assigned to career paths as well as departments which allows for planning, collaboration and integration.

Distinctive features that these three models share include:

- broad clusters of related occupations,
- all specify related academic and vocational courses,
- increase in teacher cooperation and collaboration, and
- provides opportunities for linkages with appropriate post-secondary programs in tech-prep and with employers in school-to-work programs.

As an example, if a school adopts one of the above models, a program might offer manufacturing technologies rather than metalwork or welding. The implications are that students receive academic and technical training appropriate to engineers as well as assembly-line workers. These models are seen to be particularly related to urban areas where the advantages include: size -- where there are many high schools which allows for specialization among them; concentration of employment where the connections with employers for work-based learning are critical -- both for providing the job sites and also for providing opportunity to understand the jobs, skills requirements and labour market issues; and the associated cultural and political life of urban areas which provides opportunities for schools and students to reconnect with their communities.

The literature outlines some advantages seen in this approach:

1. creation of smaller educational environments; advantages of students and teachers getting to know one another;

2. exposure to work for urban students;

3. reduction of drop-out rates:

    - some evidence from academies that integrated curricula decrease drop-out rates;

    - anecdotal evidence that smaller scale provides more incentive to stay-in-school;

4. assist in promoting some different methods of teaching:

    - instead of school seen as a process of discovering deficiencies and overcoming them, efforts taken to change instruction to more active forms that allow for "meaning-making" where education through occupations provides a context for instruction,

    - the best of these programs concentrate not as much on information transfer rather on higher order capacities or generic skill development including problem identification and solving, team building, and other interpersonal skills; and

5. these programs are particularly relevant to students from lower socio-economic backgrounds where family experience and background in the work world may be weak.

4.13 INDUSTRY-BASED EDUCATION: A NEW APPROACH FOR SCHOOL-TO-WORK TRANSITION

In the U.S. policymakers have provided strong support and have had high expectations of vocational education to achieve success in the following areas: the assimilation of immigrant youth, reduction of dropout rates, creation of new employment opportunities for displaced workers and those with special needs, and women re-entering the workforce. Many parents and educators view vocational education as a high school dumping ground that cuts off college opportunities and relegates students to a future of low-paying, dead-end jobs.

Challenges to those concerned with school-to-work transitions involve developing strategies for building on existing vocational education by developing approaches to workforce preparation that transforms vocational education from its traditional emphasis on occupation preparation to a focus on large industries that can provide a much broader context for imparting work-related knowledge and skills. This new proposed structure downplays preparation for specific occupations and instead emphasizes providing students with understanding of major industries. It is proposed that skill training both academic and vocational, would be taught in a much broader context.

There are few working examples of this approach and no systematic framework. The literature identifies the importance of identifying a manageable number of industries -- suggestion of ten to twenty with the specification that the definition of an industry account for at least 3% of national employment or GDP. An American engineer, John Gnaedinger divides the U.S. economy into sixteen industries that capture every form of economic activity in the legal, paid economy. He has proposed an industry-based plan for Chicago's high schools -- Chicago Careers for Youth whose major aspects would include consideration of at least eight major influences on the functioning of an industry in modern U.S.:

1. structure and organization;
2. history;
3. technology;
4. economics;
5. human resources;
6. government;
7. health and safety; and
8. environment.

Within each of these aspects the curriculum emphasis will be on gaining experience with strategies for learning about each of these topics and understanding of how they influence the functioning of an industry and workers' roles within it. There will be exposure to the particular body of industry knowledge and skills, however the focus will be on the above eight topics.

Implications for this model include:

- the restructuring of vocational credentials around industry rather than occupational classifications; and
- roles for academic and vocational teachers would include development of curricula and teaching methods around long-term student projects that address real issues and problems prevalent in their chosen industries -- a primary means for integration of academic and vocational curricula

In this model academic teachers would be encouraged to develop an industry specialization, and vocational teachers an academic specialization. The challenge for educators in an industry-based approach would be to develop a curriculum that effectively draws upon experiences of students in the kinds of jobs they are most likely to obtain while in high school, rather than expecting employers to create vastly different kinds of opportunities. The role of employers as partners in an industry-based curriculum would consist of at least four functions:

1. provide a real work environment where students can apply knowledge and skills acquired in the classroom;
2. identify broadly defined knowledge and skills requirements in particular industries;
3. identify and structure real problems that students can investigate and work to solve; and
4. evaluate performance of student workers, particularly with regard to problem-solving and team work skills.

4.14 EDUCATION FOR EMPLOYMENT IN THE NEW ECONOMY (CLC -- CENTER FOR LEARNING AND COMPETITIVENESS -- UNIVERSITY OF MARYLAND'S SCHOOL OF PUBLIC AFFAIRS)

This organization works with American practitioners and policymakers to apply lessons from international education and training systems to policy development and system design in the U.S. In 1993 CLC brought together twenty-five leading experts from state and federal organizations as well as international leaders to identify the most pressing issues for policymakers and practitioners working in U.S. school-to-work transition. Consensus developed around the following five areas in need of immediate attention:

1. the building of a system with particular attention to governance and finance;
2. developing standards, assessment and credentialing;
3. building partnerships: identify the role of participants;
4. designing quality programs; and
5. providing career guidance.

Comparative learning teams were established and extensive inquiries were made in Sweden, Denmark and Switzerland. Findings from these inquiries are incorporated into the literature reviewed for those countries. However, it is significant to point out here some summary conclusions:

1. the U.S. must create structures and processes that build active involvement by all partners at all levels simultaneously;
2. these countries had national, regional and local industry structures on which to build;
3. employers and workers were part of industry-based organizations which in turn were part of large confederations providing opportunity for government to get systematic input from their economic partners;
4. industry must define its needs; and
5. workforce preparation cannot occur without all three partners investing financially.

The literature states that there is a consensus growing among some leading U.S. economists that the U.S. economy is creating jobs and improving productivity faster than European competitors. The difference is seen to be mainly due to the costly rigidity of the European labour markets and the high costs of European welfare systems.

systems. Current debate exists as to whether European training programs increase national employment or productivity of individual firms any more than the public and private programs offered to U.S. youth.

4.15 PART-TIME EMPLOYMENT

Research evidence generally indicates the following about student part-time employment:

1. jobs that provide greater opportunity for students to use and develop their skills have more positive effects;

2. usually short-term gains in earnings and access to employment after leaving school for students who work while in school;

3. working long hours while in school may interfere with educational attainment;

4. as the number of hours per week spent working while in school increases, a tradeoff between short-term and long-term economic gains emerges;

5. students who spend many hours a week in paid employment put in less time on homework, get lower grades or test scores, are more likely to drop out, or express less positive attitudes and aspirations about school;

6. from a 1991 study, evidence is that working students' grades may overstate their actual performance because teachers lower their expectations -- 88% of teachers interviewed in the study felt that outside jobs had a negative impact on students' classroom performance; and

7. a positive association between working a moderate number of hours per week and school outcomes.

Students who find jobs they like during their last high school year may have a greater probability of going to work after high school and not continuing in post-secondary education; on the other hand, students who are already interested in going to work and not to post-secondary education may be more likely to enroll in co-op while they are in high school and may also make more positive statements about their high school jobs. Both these explanations may contribute to the linkages between co-op participation, positive reports about final year jobs, and subsequent participation in the work place. These explanations each have different implications for educational policy. The first implies that co-op and good jobs for students may divert them away from participating in post-secondary education, and the second assumes that students know what is in their best interest and implies that co-op and good jobs should be promoted to help students achieve their own purposes. These findings may reflect the fact that co-op programs studied in this research are tied to traditional vocational education programs with the goal of preparing students for immediate employment, not further education.

4.16 GENERAL IMPLICATIONS FOR STRATEGIC DECISIONS AND POLICY DEVELOPMENT

The literature identifies the following general implications for developing appropriate policy and making strategic decisions with regard to developing an effective and efficient school-to-work system in the United States.

1. Importance of maintaining the post-secondary option open for all students through the integration of vocational and academic education.

2. Further research needs to be done in terms of measuring costs, particularly the opportunity cost of foregone earnings for participants in education or training programs. A further analysis of existing data from longitudinal studies could yield valuable information in this regard.

3. A full-fledged school-to-work system does not yet exist in the U.S.

4. The most fundamental decision is whether the new system will be designed only for the "non-college" bound student or whether it will include all students.

5. The above decision has a direct bearing on the kind of school-based instruction, the level of integration of vocational and academic curriculum, and the kind of work-based learning that should be offered.

6. If the decision is to address only the needs of the "non-college" bound student, this would detract from the image of the new school-to-work system.

7. Keeping the above option open would avoid trying to sort students ahead of time, limiting students' future career prospects and stigmatizing the new school-to-work system.

8. Disadvantage of trying to keep the option open is that teachers may find it more difficult to accommodate a heterogeneous group of students.

9. Employers may object to offering training slots to students who do not come to work in the industry.

10. Major decisions must be made about the curriculum of school-to-work programs. These could be career pathways which consist of a set of existing courses that students may elect to follow in a logical sequence or they could be whole new school-within-schools and curricula which build interdisciplinary linkages around particular career themes.

11. Federal funds in the U.S. for vocational education must now be spent only on programs that integrate vocational and academic education which requires active collaboration of non-vocational teachers and vocational teachers.

12. As well as school-based instruction, school-to-work systems are to give new emphasis to work-based learning. Whether work-based learning will be designed primarily to prepare students for immediate employment which implies learning specific skills, or to develop general cognitive skills is an issue to be resolved. The development of new skill standards for occupations and industries may help in resolving this issue.

13. Whether students' time in workplaces should be spent mainly learning how to do the work or whether students should also be using the workplace as a setting to learn other things has important implications for the work-based component.

The creation in the United States of an effective and efficient school-to-work transition system that enhances opportunities for students and employers is a challenge of major proportions. Questions around the topic of school-to-work transitions are complex and there are few definitive answers. Even when programs have been found to be successful it is difficult to determine the key success factors because of the multi-faceted nature of the programs and the different implementation strategies in different locations. This will continue to be the case unless program standards are enacted and enforced which seems to be unlikely; however if occupational and academic skill standards are established as called for, program standards may not be necessary. If new school-to-work programs can improve student performance and enable young people to master the process of learning while they work they will be seen to be successful.

5. GERMAN EXPERIENCE

The experience of Germany in school-to-work transition is important to consider when examining successful practices of other countries. Germany has a long and well established tradition of preparing students for the work of work accompanied by a highly regarded international reputation for the success it has achieved. This section of the review will deal with an identification of the main characteristics and the context of the German model.

5.1 FEATURES AND CHARACTERISTICS

Vocational education is industry-driven through well-established systems. In Germany there is a national system of four types of industry chambers: Chambers of Industry and Commerce (larger firms); Chambers of Small and Mid-sized firms and crafts; Chambers of Agriculture; and Chambers in the Professions. National law requires every firm to be a member of the Chamber (except in professions). German apprenticeship is not administered on an isolated basis but is connected to a broader context of complexities.

Trade unions have staff dedicated to apprenticeship and they come together at a national level. National labour federations consider their policy role essential to protecting apprentices' rights and assuring quality training. National frameworks are in place and are developed through consensus of all partners. There is increasing integration of initial training, further training and retraining which reduces fragmentation and keeps workers current with new technology.

Characteristics of the German vocational education system include:

- low drop-out rates at both secondary and post-secondary levels;
- strong commitment to science and research and development;
- employers rely on high quality vocational training through the education system, or they provide it;
- highly developed mechanisms of internal mobility based on career advancement; and

- industrial relations in Germany are seen to be cooperative.

The German school-to-work model relies on the principles of the "institutional model" which is characterized by organized interactions among institutions -- firms/schools/unions/governments. Individuals are free to make decisions, are supported by an institutional network, and are provided with clear indication of opportunities and ways to achieve career goals. Individuals who participate in this model are seen to develop a strong sense of belonging with an accompanying sense of responsibility to their community, their company, and their country.

5.2 SOCIAL COHESION

German society signals to its children the goals and rewards attached to education. In secondary schools students are streamed to their inclination and abilities, and there is fierce competition for placement in the best training firms. Drop out rates are less than 10% in Germany.

5.3 CURRICULUM OPTIONS

The German model is responsive to two types of diversity:

a) diversity of students' abilities and interests; and

b) diversity of labour demand in the job market.

The system proceeds from early streaming between ages of 10 and 12, and at age 15 or 16 most of those in nonacademic streams enter the "dual system". This consists of learning in a firm under the authority of a certified Meister. This learning is combined with school attendance for general and theoretical instruction. Approximately two-thirds of German students enroll in the dual system. Students have written contracts. Changes between educational routes are somewhat difficult because of rigorous achievement tests, however they are possible at several stages. About one-quarter of students who hold the Abitur (passport to university admission) become trainees in the dual system; 13% of trainees go on to further education or training after completion of their apprenticeship in the dual system.

Approximately one-quarter of German firms provide full-time work/training for two-thirds of students aged 16 to 18. There is an obligation made by employers to provide formal training to all employees under 18 which extends compulsory education, at least part-time, to that age. This is within a legislative framework at the federal levels and under the aegis of the Federal Institute for Vocational Training. The standards are set by tripartite institutions with careful monitoring and accreditation. The qualifications are recognized across all sectors and throughout the country. The dual system is organized through an extensive collaborative effort of social partners involved in tripartite institutions -- governments, employers and labour unions at all levels of administration -- federal, state, and local.

Major elements of quality control for the German dual system include federal regulation of occupational content, a national syllabus and the final exam. Guidelines outline what a skilled worker should know and be able to achieve without guidance at the end of the preparation period. Outcomes are determined based on the research of the actual workplace. If the employers and unions agree on these outcomes, the training standards are established for that profession. Standards are established for common content and expectations across the country. Training syllabi and final exams are updated periodically in keeping with best practices in occupational areas. The content of instruction is taught by Meisters in firms, vocational schools, and local training centers. The final exam assesses competency of the apprentice with respect to the syllabus. Trainees may move into different occupations or from apprenticeship to the university system, although this is not common. German apprenticeship leads to a journeyman credential and eligibility for Meister training. This is usually attained following a period of five working years and is completed generally when the individual is in their late twenties.

The work component of the training programs guarantees a trainee wage. Firms are held accountable for the success of trainees on final credentialing examinations, and they retain trainees in their employ and support their preparation until they are successful.

Increasingly, discussions are taking place to allow graduates of the dual system to enter university.

5.4 COMMITMENT OF EMPLOYERS

Employers' organizations such as the Chambers of Industry and Commerce and the Chambers of Crafts play a central role in that they monitor the delivery of training in companies and in institutions; they establish training centres to correct any deficiencies and ensure uniform quality standards; and they give accreditation to firms as providers of training in the dual system. It is a requirement that training firms in Germany are certified by the appropriate Chamber.

By providing training at their own expense, companies make a substantial contribution to education in Germany. The average cost of training an apprentice is about $13,400 a year and the length of the apprenticeship is two or three years. The involvement of German employers in training is not confined to the dual system -- fewer than one-quarter of German companies participate in it. In 1989 in Germany, the private sector devoted 2.18% of GNP to vocational education and training and continuing education. Employers see their commitment as contributing to social stability by providing employees, particularly youth who have recently left school, with status and a place in society. Key elements for coherence -- clarity of signals from employers, integration of academic and vocational curricula -- are provided in the German school-to-work transition.

5.5 CONTINUOUS LEARNING

The German dual system is deeply integrated into a learning continuum. After nine years of full time compulsory education a student may select one or any combination of the following:

a) a three-year academic program in preparation for university;

b) a one or two-year full-time vocational program in preparation for work or further study;

c) dual system composed of:

  - part-time compulsory vocational education -- includes basic academic courses;
  - on-the-job training for a three or four-year period resulting in a credential -- this system is provided only in state-recognized skilled occupations.

Career experience is heavily relied upon for promotion in the German system. Internal training is complemented by a wide variety of vocational training in post-secondary technical school which is often supported by chambers of industry and commerce, and in universities. Research has shown that the occupational training system and the recognition of human resources in the firm's strategy encourage rapid adoption of appropriate technologies and organization change which are seen as keys to improved productivity. Widely recognized and highly regarded qualifications give workers negotiating strength within the firm and the labour market generally.

As important and less well-known are Germany's programs of full-time, school-based study for a number of occupational areas. The vocational school provides instruction in theoretical aspects of occupation which include a combination of classroom and workshop classes and which complement the applied skills taught within firms. Teachers work together to combine subjects so students are presented with a unified body of information and skills.

5.6 VOCATIONAL GUIDANCE

Vocational guidance begins in the last two years of compulsory education and is provided by representatives of the department of labour. Students may visit firms for periods of one to four weeks in order to assist them in their occupational decisions. Students also take a work studies course in compulsory school to gain information on the functioning of the economy and companies and other information such as purposes and functions of trade associations. This information drives the selection process. Trainees are selected by firms based on their internal criteria. Academic background is one criterion along with indicators of team effort and family support, which are seen to ensure continued and successful participation of the trainee. Training of young people is seen as an important investment, and firms want to make the best choice in their selection of trainees.

The Federal Institute of Labour is the sole provider of vocational guidance and this ministry is structured to accompany the individual from start of work experience through to retirement. The ministry is also responsible for:

- conducting labour market and vocational research and maintaining labour market statistics;
- job search and placement;
- promotion of vocational training, retraining and rehabilitation;
- creating and maintaining jobs;

- sustaining workers during wage-disruption, unemployment and new employment;
- economic assistance in obtaining further vocational credentials; and
- improvement in employment structure in individual sectors of the economy.

Trainees select firms based on the quality of their programs and potential benefits that may be derived from affiliation with the firm. The trainee as consumer is assisted by a number of partners: Department of Labour, Chambers, and work councils which monitor training firms and trainee placement and act as trainee advocates. The apprenticeship process in Germany is characterized by one-on-one mentoring where trainees receive on-going advice and information. An optional year exists in the German system where youth are given an opportunity to explore a number of occupational fields in the German basic year of school-based vocational instruction.

5.7 ROLE OF GOVERNMENT

Germany is a federal state with a decentralized coordinated administrative organization. The primary responsibility in education rests with the states. The "Standing Conference of the Ministers of Education" and a federal presence through the Ministry of Education and Science ensure a high level of coordination. The "basic law" states that freedom of movement and occupational choice necessitates cooperation among states for the standardization of school and higher education systems in terms of structures, curriculum and evaluation systems. Federal labour legislation regulates in fine detail the working conditions and training of workers as well as social negotiations at the local level.

Special mandates are made to government agencies to do what is necessary in the way of remediation, language training, and travel and accommodation stipends needed by youth to pursue successful training.

The committee of the representatives of the Standing Conference of Ministers of Education and Cultural Affairs of the Lander and Federal Ministry draw up curricula for specific occupations. The federal minister issues training regulations specifying the name of the trainee occupation, the period of training, and the abilities and knowledge outcomes of the training.

The German system illustrates the importance of government's role as an active partner in building coherence between the labour market and educational institutions with a strong commitment on the part of employers. Positive characteristics of the education system, the labour market, and the economy reinforce one another in the German model and indicate the high degree of coherence required to achieve success in school-to-work transition.

5.8 KEY ELEMENTS OF THE GERMAN SYSTEM THAT SUPPORT A QUALITY LEARNING PROGRAM OF CAREER PREPARATION

Following are some of the elements identified in the literature as critical to the support of quality career preparation:

1. integration of theoretical and practical training;

2. governance: coordination and monitoring at multiple levels. The German Federal Institute for Vocational Training (BiBB) models an institutional arrangement that generates research and development activities carried out with cooperation of the social partners to promote policy and program development. It researches questions related to policy implications and writes reports for the German Parliament. Firms have a stake in the choice and results of research -- they fund 25%, the government funds 75%. BiBB facilitates dialogue on standards and the partners achieve formal agreements about standards which are issued as ministerial orders. At regional and local levels, the Chambers are at the hub of communication between schools and teacher, and between the business community and its training resources. Vocational school reports of student progress are shared with employer/Meister, and the school provides a liaison who visits the training site to discuss progress of apprentices.

3. role of Meister (Master Trades Person) and trainer. This person is at the centre of the system. In small and mid-sized firms the Meister or firm owner is responsible for ensuring that the trainee acquires the necessary competencies to pass the final exam. Large firms often have specially prepared career trainers who instruct in-firm workshops. The work of trainees is evaluated at short intervals with the aid of criteria developed by the firm. Trainers and the firm's management draw up the training plan and determine how many trainees are to be recruited and in which occupations. Orientation training is followed by work on the production floor. The trainees spend time in each department and work with a variety of skilled workers.

The firm's owner is responsible to ensure that training is carried out in accordance with the Vocational Training Act of 1969. Firms must register the responsible trainer with the Chambers and the trainer works to draw up a training plan for the apprentice to ensure that the required skills are taught. All training must conform to the plan. There is great interest in the apprentice both professionally and personally, and the Meister or trainer is involved in career and personal counselling to the trainee. This whole process is taken very seriously.

5.9 ROLE OF THE CHAMBERS AND TRAINING CENTRES

There are 127 trades in Germany. There are the regional Chambers for the skilled crafts of small and medium-sized enterprises (Handwerkshammers) and the Chambers of Commerce and Industry which represent large businesses and industries. Nationally there are approximately 56 Crafts Chambers and 80 to 90 Chambers of Commerce and Industry. All function as self-governing bodies and work to address changing job requirements and skill levels of their respective workforces. Approximately 10% of firms represented by the Chambers of Commerce and Industry provide training; in the crafts sectors about 40% of firms participate in training.

One-half of all youth trainees in the dual system are in placements in firms of less than 50 employees. Small and medium enterprises are major participants in German education and training, and they look to the Handwerkshammers for extensive support. All firms in the regional area pay fees to the Chamber whether or not they have apprentices or use its services.

5.10 ASSESSMENT OF KNOWLEDGE AND SKILLS

There are three major elements of quality control for the dual system:

1. federal regulation of occupational content;
2. a national syllabus; and
3. a final exam.

National standards are established for content and expectations along with outcomes based on research and workplace requirements. Training syllabi and final exams are updated periodically in keeping with best practices in the occupational areas. The Chamber determines conditions of the exam and the examining boards are composed of equal numbers of employer and employee representatives and at least one vocational teacher. Continuous progress involves a journal of required skills which the Meister signs off as each skill is acquired. Currently debates centre around reconstructing curricular plans and final tests into modules and testing at the end of modules.

5.11 TRAINING OF TRAINERS AND TEACHER DEVELOPMENT

Nationally there are approximately 800,000 in-firm trainers, about one-half are Meisters and the others are qualified through alternate routes. Teachers in Germany are civil servants and are accorded a high social status.

5.12 CHALLENGES FOR THE GERMAN VOCATIONAL SYSTEM

External pressures on the German system include international competitiveness and demand for high performance workplaces. Reduction in the economy has had an impact on the number of available training places with firms. Also, the reunification of Germany has caused a rethinking of the dual system. Greater numbers of German youth want to enter university education, and industry is concerned about the demise of the well-skilled worker. Increasingly policy concerns focus on ways to allow graduates of the dual system to enter university and/or to elevate the dual system to a university equivalent. Other challenges faced include:

1. problems of unemployment and providing training for all students -- more than 90% of all youth are involved in some form of vocational training;
2. problems of integrating immigrant youth into training;
3. shortage of vocational teachers:
    - there are ten times more vocational trainers than teachers in the dual system;
    - causes a difficulty in providing basic education required.

5.13 IMPLICATIONS OF THE GERMAN MODEL

Research suggests that this model is successful in meeting the requirements of coherence, a lower drop-out rate, more highly skilled workforce, etc. The cultural and general environment for vocational education differ significantly compared to Canada: the strong support of business for their responsibility in the school-to-work transition; the national standards throughout the system; the educational performance of young people; the apprenticeship system; the accreditation of firms providing training, and the role of the trainer; the significant partnerships that have existed over many years in preparing young people for the world of work; and the esteem with which vocational education is held in the country. Some key elements of the German system identified in the literature as critical success factors include: the integration of vocational and academic curricula, the governance model, and the role of the teacher and trainer. These key elements are not present in the Canadian model.

6. DANISH EXPERIENCE

Education in Denmark is seen as a mechanism for liberating the individual; providing choices in occupations and the way the individual contributes to society; and the pathway for addressing the needs of the labour market. The Danish experience provides insight into reforms that attempt to provide greater success in the school-to-work transition.

6.1 FEATURES AND CHARACTERISTICS

There are many similarities to the German model, however the Danish experience is relevant to an understanding of successful practices. Since 1991 Denmark has been in the midst of reforms to broaden workers' skills and build greater flexibility into the system of school-to-work transition. Emphasis is placed on helping students acquire a broad theoretical and technical knowledge base with specialization gained through the workplace. The Danish believe they have begun a process of merging the best elements of the old apprenticeship system and the new school-based learning system.

6.2 CURRICULUM AND PROGRAMS IN THE LEARNING EXPERIENCE

Youth receive a strong education foundation during compulsory school years – Grades 1 through 9, and an optional tenth year of compulsory school is available for students who are not ready to move onto the next level. About 40 to 50% take advantage of this tenth year with some young people spending this time in special boarding schools. Students generally are kept together throughout their compulsory school years with a class teacher that guides them through the grades and maintains close parental contact.

The upper secondary education system is free and voluntary. Ninety-three percent of youth continue into upper secondary education. At age 16 or 17 they branch into one of three different types of upper secondary schools: commercial studies, technological studies, and general studies (gymnasium). Technical and commercial colleges combine general subjects and vocation-related practical training (in school-based workshops) and trade-related theoretical training. Each program leads to either:

a) leaving exams which qualify students to seek admission into universities or colleges of higher education (for students attending full-time programs); or

b) occupational certificate (for students pursuing the basic or practical training courses).

Through this certification, individuals have access to the labour market. The remaining 7% of young people enter the labour market directly after compulsory school.

There are no special grade requirements to enter or continue through vocational and technical college system. Likewise, there are no grade requirements to enter the general studies program, but students must be recommended by teachers regarding their ability to achieve in the course of study. Throughout the country there are some schools that are specialized by occupational areas. Youth normally attend local schools in the early stages of training, and then as they progress may go to a more specialized school in order to cover particular aspects of the trade.

Within technical and commercial upper secondary education, young people can pursue several options based on occupational readiness and interests. Programs run for three years, and youth from the general studies program can transfer into vocational training program at various points. Programs are built upon an alternating school-and work-based learning pattern. The period of job placement is usually one or two years. The respective trade authority and the individual sites determine the division of time between school and work depending on requirements of the field. Youth still have the option to continue into higher education. The learning experience begins with a common year of basic vocational training that can be entered through the company program first or the school program first. As soon as trainees have a company contract they begin to earn a training wage and they receive this wage during their in-school training only if they have a company contract. Youths who begin in the school-based program qualify for a student allowance until they find a company placement. Students are responsible for finding a placement, and they are coached by the school.

Vocational instruction is organized around products and projects and the company expectations are described in detail in the framework of agreement that exists between the company and the trainee. Each upper secondary school option leads to either higher education or occupational certificates which can also lead to higher education.

The Meister/pupil relationship of commitment and nurturing is the basis of the apprenticeship system in Denmark.

6.3 COMMITMENT OF EMPLOYERS

To ensure adequate numbers of training slots, incentives have been created to achieve greater employer participation. When placements cannot be found, special workshops and simulations have been developed. Training firms in Denmark require licensure by the state. Firms are assisted in staying current with respect to practice and technology through resources of federal agencies, employer associations, etc. There are repercussions for poor performance as employers are accountable for trainees' success on final examinations. Firms must retain trainees in their employ and support their preparation until trainees successfully complete final credentialing examinations.

The philosophy within the business community is that the trainee must pull his/her weight in production and not be a cost to the firm.

6.4 KEY ELEMENTS THAT SUPPORT A QUALITY PROGRAM OF CAREER PREPARATION

1. **Reduction in number of vocational streams.** The number of vocational streams has been reduced from 300 to 87 with further reductions taking place until the goal of ten to twelve is reached. These streams are designed to allow latitude for students to move into various occupational pathways or to pursue further education. The aim is to develop individuals with broad skills to ensure greater flexibility of workers, thus the trend is towards fewer and broader streams leading to gradual specialization. Increasingly the demand is for workers whose training reflects a combination of skills and who are familiar with new technology.

2. **Governance: collaboration between the "social partners".** Through the governance structures, employers and unions exert influence on content of vocational instruction.

3. **Clarity of expectations.** On-the-job expectations are clear and trainees are assisted in meeting the challenges. There are incentives to pursue more challenging work and students are recognized for their accomplishments.

4. **Tracking of students.** All citizens in Denmark through age 19 are tracked and encouraged to enter a training program if they are not enrolled.

6.5 ROLE OF GOVERNMENT

The Ministry of Education sets the overall framework and standards for general subjects, including volume of school training, resources to be committed and the specific trade or occupational areas to be covered. The Ministry also determines the framework that affects the level of funds that trade committees will commit for in-company training and the content of the vocational training in the schools.

The Ministry is advised by the Council for Vocational Education which is composed of an equal number of senior representatives from management and labour. The Council of Vocational Education works with the National Conference of Unions and the Confederation of Danish Industries to develop the overall mission and vision for the school-to-work system, approves new programs, allocates funds and provides general direction for occupational programs.

6.6 ROLE OF THE TRADE AND EDUCATION COMMITTEES

Trade committees (represented by trade unions and associations of employers) determine courses that meet the Ministry standards. Approximately 50 trade committees set standards within the vocational subjects for school and in-company training; they evaluate and accredit in-company training places; they decide on, implement, and pay for the respective final trade test.

Education committees are at local levels and are made up of labour and employers in various trades. They advise schools and help in the development of local plans for implementation. Continuous assessment of individual students is carried out by the school and industry training partners. Employer and trade associations approve trainee placement and training companies are constantly evaluated. Firms go through an accrediting process to qualify as training firms.

"Inspectors" in Denmark work with the social partners to determine occupations and standards for training programs. They serve as facilitators in determining standards and help to resolve problems if all parties are not upholding their obligations. They carry out investigations into complaints about learning at schools or firms. Consultants visit sites to examine learning programs.

6.7 GUIDANCE AND COUNSELLING SERVICES

Each student gets three and one-half to five hours of guidance per year. There is a public vocational guidance service for everyone from age 18 and over.

6.8 ASSESSMENT OF KNOWLEDGE AND SKILLS

There is continuous evaluation throughout the school/work period by the teacher and worksite mentor. Schools provide employers with an explanation and discussion of student progress. Instructors in the vocational colleges may ask the company to focus on deficiencies while training in the company.

Students maintain log books that describe the program and point out deficiencies. This is passed on to the firm and can be used to structure the learning to complement the school work. There is an emphasis on student self-assessment. Three assessment phases that lead to the journeyman certificate include:

1. certificate from the school stating student passed all school periods;

2. certificate from the company stating trainee completed in-company training; and

3. certificate from trade committee stating that trainee passed final trade exam.

For most occupations, the final exam is established by trade committees and requires that students complete a product or project along with a written and/or oral exam by the trade committee. If the apprentice fails the final exam, the training firm is held responsible and by law the firm must provide the apprentice with extra training at company expense until they pass.

6.9 TRAINING OF TEACHERS AND TEACHER DEVELOPMENT

There is no formal system of preparation for company trainers and there is a difference between large and small companies. Teachers are required to have an upper-level secondary education, a practical background, and five years of successful working experience beyond the time they receive their journeyman certificate.

6.10 CHALLENGES FOR THE DANISH VOCATIONAL SYSTEM

The Danes face the challenge of achieving a balance between needs of business and a vocational education system with in-firm training as a central design element. An additional challenge is to continue to work at the reforms to reduce the number of vocational streams.

7. SWEDEN EXPERIENCE

The vocational education system in Sweden is primarily school-based. The literature and findings related to Sweden are of particular relevance to this review because reforms are being attempted that require vocational students to spend at least 15% of their secondary school time in work-based study on the job. The purpose of this work-based approach is to expose young people to real work activities and to achieve a greater interest in vocational programming among employers, thus bringing schools and business into a closer relationship.

7.1 FEATURES AND CHARACTERISTICS

The Swedish system provides for ample and diverse learning places for young people that ensure their development. Students and their parents select the most appropriate school and public funds follow the students. Schools compete for students, and have the option of developing programs based on local needs and interests.

Upper secondary schools are community-based, serving adults as well as students. Vocational instruction is organized around products and projects and students spend time in special projects to study areas of interest and to develop investigative skills. The education system is free and has multiple re-entry points. All youth under age 20 must be provided an upper secondary education and those who do not enroll can receive further education in youth centres.

These centres have responsibility for placing these students into a school or training situation and for tracking the students who come to them. Each student selects a specific occupational area of study (including those preparing for university). This ensures a place in the systems and gives a focus to work without limiting options for future career choices.

There is a core set of subjects that all youth must take whether vocational-based or academic-based. All upper secondary national programs articulate with post-secondary level education.

Employee and employer associations have full-time liaison people whose responsibility is to maintain active connection with all levels of the education system. Informal channels of communication exist between employers and schools. Parents are routinely involved in finding work placements at their own worksite and creating opportunities for job shadowing.

In Grades 7 through 9, students spend one week a year in the work world. Each school has an "informer" who is knowledgeable about the labour market and is responsible for educating students. By the end of the 9th Grade students are prepared to make choices about their careers.

The funding of education allows for firms to create their own schools and take further responsibility for occupational training. Key features that facilitate integration of academic and vocational studies include:

- block instructional schedule that gives students necessary time for theoretical and practical studies relating to their national program;
- school structure of "houses" built around the program clusters which allows for teams of vocational and academic teachers to work together; and
- academic instruction imbedded into vocational instruction.

Findings from the literature describe the impetus for the reforms is due to general dissatisfaction among employers with the prior system; increasing international competition; and the need to improve access to higher education for students studying vocational subjects. Along with government, employer and labour associations have played a critical role in initiating and driving the reforms. Because of a decentralized education structure, the role of the national government in bringing about education change is increasingly limited.

Trying to attain a balance between national regulations and local municipal control has led to the establishment of a national framework with local decision-making on how to implement and achieve goals. The national curriculum has been eliminated in favour of syllabi that indicate what pupils are to learn; how students are to learn is determined by local municipalities who are required to develop strategic plans and employ teachers.

Sweden has moved to a choice system where schools are in competition for students. Government subsidies follow the student and schools market their programs. Companies can also contract with schools to offer education programs. Accessibility to programs and entrance qualifications are driven by a combination of student and employer supply and demand.

The revised mission of vocational education is to prepare students for further training and lifelong learning rather than a specific occupation. Most employers believe that more formal in-school training is required, and they are not in favour of pure apprenticeship programs. There are sixteen program clusters -- fourteen are primarily vocational oriented and two are for high education. The two university options are chosen by 45% of students with the main track being the social science option chosen by 83%. Less than 17% go into the science and technology option. Each of the clusters has different curricular emphasis with a combination of compulsory and optional classes. The system allows opportunities to change direction and make successive choices. Along with the sixteen program options, each upper secondary municipality provides individual choice options. They are designed by the student based on personal interest and needs and approximately 10% of high school students enroll in individual programs.

There is no "general track" of study at upper secondary level and by age 16 every student selects a program cluster. The focus is to receive a solid academic foundation which ensures the opportunity to maximize options and allow for transferability. Swedish students in the upper secondary system are always working towards a defined goal.

Because the education system is free and has multiple reentry points there are no penalties for changing directions. Results of performance are important. The needs of special education students are served and they are integrated into regular classrooms wherever possible. All students under 20 must be provided with an upper secondary education and those who do not enroll (about 10%) receive further education in youth centres. Adults can choose to reenter the education system at any time and adults may attend the same classes as 16 to 19-year-olds, which is seen to have a positive influence.

7.2 ROLE OF GOVERNMENT

At the national level education is organized into two units: the Ministry of Education and the National Agency for Education. The Ministry of

Education sets the mission and goals for education including the learning objectives and a required set of core courses. The National Agency for Education is responsible for developing a national plan from the Ministry's mission and goals as well as developing and revising a national plan in partnership with business and labour. Government authorities exercise significant control by centralizing influence over the curriculum frameworks. Every three years the national curriculum syllabi are revised.

Municipalities take national goals and syllabi and develop them into a local program which they are also responsible for evaluating. Guidelines serve as minimum requirements for local firms involved in training along with vocational schools.

Government agencies are charged with the responsibility of remediation, language training, and travel and accommodation requirements of youth to pursue success in their training.

7.3 KEY ELEMENTS THAT SUPPORT A QUALITY PROGRAM OF CAREER PREPARATION

1. **Reforms affecting the quality of vocational education.** Sweden is undergoing comprehensive reforms which are moving it from a highly centralized to a decentralized system. Vocational education is becoming more fully integrated into the curriculum, and in-firm training time has become a requirement for most of the curriculum options. New reforms make it possible to move towards an increased employer responsibility for on-the-job training and for business and education to work together. Policies provide structure and support for this partnership. During the third year of upper secondary school studies, vocational students must spend at least 15% in on-the-job study.

2. **Governance structure.** There is strong central authority control over the content of what is taught and the development of curriculum frameworks takes place on a national level. Central authorities exercise control over the curriculum content and frameworks.

3. **Close relationships and vehicles of communication among partners.** The education/industry/labour partnership is strong at the national, regional, and local levels. At each level there is a council or broad partnership of all partners. These are members

of powerful employer and union associations. There is a committee structure for each of the major cluster areas which ensures quality for each occupational area. Because the reforms have given more control to municipalities, employers are becoming more involved. Schools in partnership with local governing boards and employers are beginning to create their own programs based on local labour market needs.

7.4 ROLE OF THE EMPLOYEE AND EMPLOYER ASSOCIATIONS

Employee and employer associations have full-time liaison people who maintain connections with all levels of the education system and informal channels of communication exist between employers and schools.

7.5 CURRICULUM AND PROGRAMS IN THE LEARNING EXPERIENCE

As indicated previously, the frameworks are defined and mandated at the national level and they state the purpose and the structure of sixteen subject program areas along with educational objectives. At municipal levels goals are translated into competencies by regional council. At the local level, schools and employers define what can best be taught at work or school and develop programs to meet competencies. At the municipal and local school levels, decisions regarding education are made by committees comprised of teacher unions, employee and employer associations/teachers/headmasters/ parents/and students.

Frameworks for the sixteen upper secondary national programs must be offered in each school. Each of these is for three years with the first year curriculum common to all. A minimum standard of content is set for all students; it is not different for vocational students. Students can take more than the required core level. All the national programs articulate with post-secondary level education.

Except for required career exploration programs in compulsory school, students preparing for higher education do not have a required work-based experience, although students must demonstrate that they have mastered the required competencies.

The upper secondary curriculum is modular and each component must consist of at least thirty hours. Each student must complete an academic core; a technical core; and a technical concentration. Vocational students spend approximately 60% of their time in the vocational area of concentration, and thirty hours on a special project. There is continuity during upper secondary years as students spend that time with the same teachers. The sequence is designed to provide for broad-based study, resulting in greater specialization and increase in practical occupational instruction.

The system promotes positive personal and social growth through the following strategies:

- students stay with the vocational teacher for three years who serves as facilitator and mentor;
- math courses are integrated into vocational area of student and academic knowledge provided on a need-to-know basis;
- standards are not lowered so students can meet them rather resources are available to assist students who are having difficulty;
- girls receive two to three-week summer courses to introduce them to non-traditional fields;
- students take charge of learning by engaging in projects;
- if a student is not successful in one program, the school system is responsible for helping to prepare her/him for entry into the workforce;
- students have a common foundation of knowledge, the same requirements and a common set of standards; and
- school attendance is compulsory from Grades 1 through 9.

7.6 ASSESSMENT OF KNOWLEDGE AND SKILLS

National academic goals are assessed in Swedish, English, math and natural science with a standardized test at the 5th and 9th year. The literature identifies that assessment is an area with some dissatisfaction in Sweden currently. There is interest in how to standardize the evaluation of individual teachers and the only national vocational exam is in automotive trades.

7.7 TRAINING OF TRAINERS AND TEACHER DEVELOPMENT

Worksite mentors are selected from the most senior and experienced workers in the company. Vocational teachers must have industry experience and a teaching certificate. Continued work experience is important and industry and unions provide training.

7.8 VOCATIONAL GUIDANCE

Career preparation is a strong component of the Swedish system. Workers bring children to work to expose them to real jobs, and during the years of compulsory education all students are required to get a minimum of three weeks exposure to occupational clusters. Each school has a person to educate students about their upper secondary choices.

7.9 CHALLENGES FOR THE SWEDISH VOCATIONAL SYSTEM

There are some major challenges to overcome in implementing the reforms. These include:

1. motivating companies to take greater responsibility for developing quality on the job learning opportunities;
2. viewing young people in work sites not only as learners, also as workers;
3. students are not paid for work-based learning; and
4. finding strategies to make it easier for small and mid-sized firms to be involved.

During a trial period firms received compensation for providing training. When reforms were implemented this compensation was removed making it difficult for small and mid-sized firms to be involved.

Sweden does not have a strong history of apprenticeship training and the work experience component that is required is not considered a true apprenticeship. Apprenticeships are available for students in "company" schools where students are paid for the work experience, classes are at the company and training is more intensive. This type of training attracts about 2% of students who elect a three year apprenticeship option and who know specifically what pathway they want to pursue.

Sweden has a compressed wage scale and ways are being examined to create a greater spread in wages and salary scales to motivate workers to work harder, base pay on performance, and promote, based on skills and abilities and work history.

8. SWITZERLAND

8.1 PROJECT-FOCUSED APPRENTICESHIP

Of relevance to this review is the experience of Switzerland and the progress it has made in adapting its apprenticeship system to address the need for workers with multiple skills and readiness for lifelong learning. Some firms organize learning in the workplace for the purpose of better engaging and motivating trainees through project work and exercise in research and investigation. In Switzerland managers are encouraged to develop assignments for apprentices that require gathering information within the company. This project orientation to work-based learning assists in developing understanding of the total company, and it also reinforces the important concept of self-directed learning which requires problem solving, planning and initiative.

9. GENERAL SUMMARY OF THE EUROPEAN EXPERIENCE

European models are changing and the countries that have been studied for this review are redesigning their systems to adapt to changing economic and industrial circumstances. Europeans view their education and training systems as the key to securing their economic strength and they seek to fine-tune these systems in order to remain globally competitive.

All European countries have strategies for creating opportunities for quality work-based learning and interventions which include simulated work environments, incentives to firms to provide training places, and technical assistance. Most of these systems make in-firm training a major component of the total education and school-to-work transition, which requires that the quality of the programs are dependent on the willingness of businesses to function as places of learning.

Beyond this capacity of business to support employment preparation, additional factors affecting the European programs include: quality of the vocational school, the regional/local labour market, and the involvement of Chambers and other sources of support to schools and firms. The prevailing attitude is that some training, albeit not perfect, is better than no training. There is a strong belief that theory will come as a result of practice. Research identified that these countries go to great lengths to ensure that young people are not abandoned and programs exist to accommodate their needs and provide opportunities leading to an independent and productive life.

Within the European experience some common concerns were identified. These include:

1. countries have found it difficult to integrate classroom and workplace experiences;

2. communication between educators and industry is not seen to be as adequate as desired;

3. staff development is not as extensive as desirable;

4. business places more emphasis on narrower skill development, while labour/education/government support broader skill development;

5. some inflexibility in the processes for changing national standards and curricular frameworks;

6. insufficient high skill jobs to accommodate those who are trained; and

7. a need for incentives, particularly among smaller employers.

Consistently, indicators of quality in the European experience were identified:

- high success levels experienced by participants upon program completion which included skills mastery with respected credentials that were in demand, consequently a high probability of employment or further training.
- current and relevant curricula that is clear and consistent throughout the country;
  - up-to-date instruction ensures programs are mutually beneficial to youth and employers
- flexibility in the design of the programs incorporating student diversity;
  - structures and support for special needs
  - allowance for different time frames and pathways to the same credential
  - support generally through Meister/trainer and continuity throughout the program

- program designed for broad skill development;
  - provides multiple options and decision points throughout
  - provides access to higher education and further training
- mechanisms in place for informed decision-making;
  - widespread support and understanding of apprenticeship
  - a willingness among partners to work together to accommodate needs of all
- integration of vocational and academic curriculum;
  - integration of work-based and school-based learning
- mechanisms exist for accountability at all levels throughout the system.

There is an impression that young people in European countries complete compulsory education with a more uniform body of knowledge than comparable groups of North American youth. This may be due to a more standardized curriculum and a more uniform method of financing education. Evidence is clear that European youth spend a much greater portion of their time in work-based learning situations than their North American counterparts. A very significant element in the European experience is the widely held view among all partners that youth have value, their education is an investment in the country's future, and all sectors of the society must actively support this investment. Thus, all youth in these countries are accorded the best possible education through a variety of strategies.

10. JAPAN

The Japanese system of education and school-to-work transition is seen to have many positive attributes. It is important for purposes of this review to examine those within the context of the Japanese society and culture.

10.1 STRENGTHS OF THE JAPANESE SYSTEM

The strengths of the Japanese system in many ways reflect similar strengths identified in the German system. These include:

- low drop-out rates both in secondary and post-secondary levels;
- strong commitment to science and research and development;
- reliance on high quality vocational training;
- highly developed mechanisms of internal mobility which are primarily based on career advancement; and
- cooperative industrial relations.

While the systems themselves differ, the common element in the German and Japanese systems is that of an integrative process whereby all the above strengths build upon each other in a coherent fashion.

10.2 KEY FEATURES CONTRIBUTING TO JAPANESE SUCCESS

As in Germany, there are five key features present in the cultural and societal environment in Japan which contributes to success:

1. **Social cohesion.** This characteristic of a strong sense of belonging to one's community is a key factor in Japanese success. Japan is known for the widely held consensus throughout the country that education is valued and important. This belief is fundamental in setting high standards of academic knowledge required from schools.

Parents are committed through financial effort beyond taxes to their children's education. The direct contribution of households to children's' education amounts to 1.3% of GNP. This is reflected in attendance by Japanese students at institutions like expensive night and "holiday" schools where the regular curriculum is supplemented and Japanese children are prepared for selective secondary-school entrance examinations.

Japanese workers who exemplify the concept of life-long learning through their investment of time and money in their own professional development are strong role models for students.

2. **A standard system.** This feature is a very different pattern from Germany's system of diversity in educational options. Japan has a commitment to a standard academic curriculum. The coherence in both the Japanese and German systems is achieved through strong involvement of employers in the design and delivery of professional qualifications. In Japan there is explicit sharing of educational and training tasks between the education system and employers. The strong social commitment to praise and reward for school achievement in Japan leads to high retention rates.

3. **Committed employers.** There is a high level of commitment by employers to education and training and a high level of involvement in the process of learning both general and vocational skills.

In Japan, firms are not directly involved in providing education and training services until students complete compulsory or further schooling -- either secondary or post-secondary. Employers expect a high standard of academic achievement. Once employers have recruited their students, they take responsibility for the necessary vocational training. Employers send clear signals to the education community and to students. These messages include:

- students must achieve a high level of general education;
- students must achieve a high level of social behaviour;

- students must accept the need for serious work and discipline; and
- students must have an appreciation of collective work.

Employers establish strong linkages with schools and post-secondary institutions through recruitment practices. This special emphasis on recruitment reflects a strong commitment on the part of employers to "lifetime employment".

4. **Careers and continuous learning.** In Japan there is emphasis on seniority for promotion and less emphasis on formal recognition of qualifications. An individual's place of employment is an important focus of personal and social life. Human resources in Japan are seen to be a firm's most valuable asset and are given high consideration.

   All Japanese firms provide extensive training to their recruits. Because there is no vocational education or training in Japanese schools the training done by employers includes all technical skills training along with training related to the main characteristics of the culture and philosophy of the firm. Most of the training is done internally and recruits achieve a rapid integration into the firm.

   In addition to extensive training of recruits, Japanese firms plan training both off and on the job. A system of job rotation which reflects corporate needs, ensures well-rounded and effective development of employees.

5. **Role of government.** Japan has a highly centralized system of government with the Ministry of Education closely controlling curriculum and evaluation at the national level. The Ministry of Labour and local government are active in the field of occupation training through national testing and certification of qualifications, administration of training centres, and financial assistance to small business. While this represents a high level of activity in occupational training, it is not as extensive as the training activity undertaken by major corporations.

Japan's experience shows the importance of government's role as an active partner in building coherence between the labour market and educational institutions.

10.3 SUMMARY OF THE JAPANESE EXPERIENCE

The Japanese model is a reflection of the "institutional model" -- a model used also to describe the German experience. This model does not deny general market rules or individual freedom of choice. It is characterized by organized interactions among institutions: firms, schools, unions, and governments. Individuals are free to make decisions within the context of a fully supportive network and with a clear understanding of expectations and opportunities to achieve their career goals. In other words, the description of the Japanese experience shows that individuals are not left alone to identify expectations and opportunities, but rather they develop a strong sense of belonging to their community, their firm, and their country which is accompanied by a strong sense of responsibility.

11. THE UNITED KINGDOM

Major changes are taking place in the educational system of the United Kingdom. Some of these changes are driven by expression of dissatisfaction with the education system by employers and a concern in some quarters for the reforms of the post-war era.

11.1 FEATURES OF THE EDUCATION SYSTEM

Education in England and Wales consists of compulsory schooling from primary education (ages 5 to 11 years) through to secondary education (ages 11 to 16 years) through to further education that is not compulsory (ages 16 to 18 years).

The 1944 Education Act established the above provision along with a Ministry of Education (has become the Department of Education and Science). The Secretary of State for Education is responsible for the education of people in England and Wales and the Local Education Authorities (LEAs) are required to carry out their responsibility under this authority.

At the end of compulsory schooling four options are available:

- enter employment;
- attend a government Youth Training Scheme (YTS) for two years;
- remain in school for further academic study until age 18 to attain qualification for higher education; and
- attend a college of further education to study for academic or vocational qualifications.

Unlike the experience of other countries, the proportion of 17 and 18 year olds in full-time education is relatively low -- in 1985 it was 30% compared to 72% in Canada in 1981. The Education Reform Bill introduced in 1987 attempted to centralize educational decision-making by reducing the powers of the LEAs and exposing schools to the marketplace. This resulted in a formal testing and assessment of pupils at ages 7, 11, 14 and 16. The government also attempted to strengthen the relationship of education and industry through a Technical and

Vocational education Initiative which resulted in a pilot network of twenty centrally funded City Technology Colleges.

Currently there is a high number of school leavers unemployed and ill prepared for the school-to- work transition; there are efforts to address the needs of industry and the seeming lack of coherence between youth's employability skills and the labour market by restructuring the secondary-school curriculum. Initiatives taken include: providing labour market information to students; improving communication between employers and education; and making the school curriculum more vocationally relevant, particularly for non-academic students.

A national network of education-business partnerships was established in 1991 with an emphasis on partnership and mutual benefit; not just linking schools with business.

Scotland has an established tradition of successful linkages between industry and education. These links are an essential part of the educational experience of young people and are seen to be mutually beneficial. A framework produced in the document "Education Industry Links in Scotland 5 - 18" describe benefits for partners: employees/teachers/company/school; and outcomes for pupils in the areas of: core skills/qualities/knowledge and understanding. There is integration of curriculum throughout the grades.

A study of the impact of student part-time employment done at Paisley University in Scotland surveyed 800 students at six Scottish schools and reported in the Guardian in September, 1995 showed the following results:

- 34% of the surveyed group had a job; 34% had never worked;
- students who work for up to five hours a week in their last year of compulsory schooling have a better attendance record and achieve higher exam grades than those without jobs;
- students who work for up to five hours a week in their last year of compulsory schooling are more likely to stay on at school after 16;

- students who work for more than five hours a week had poorer exam and attendance records than those who never had a part-time job; and
- results for those students working more than ten hours a week were disappointing.

These findings are consistent with the view that a modest amount of part-time work can at best be educationally valuable or at worst not educationally harmful. The findings could not be explained by the relative poverty of the different groups of workers and non-workers or geographic factors affecting urban or rural schools. Recently the government had made a decision to exempt Britain from a European Union directive limiting work by 15 year olds to twelve hours a week and as a result of these findings that decision was being questioned.

A study was conducted between May 1994 and January 1995 of fifty British companies which had an interest in a commitment to partnership with education. The data illustrated key issues in the development and implementation of policy; highlighted the range of activities in business/education partnerships; and identified good practice. Four factors identified by the companies as components important to working with education included:

- the activity should be designed to be mutually beneficial;
- the activity should be something the company is well placed to do;
- the activity should be clearly linked to the firm's business focus and development needs;
- the activity should be closely related to the identified needs of the educational institution.

The companies surveyed had clear goals for their partnership work with education which fell into five areas:

- raising educational standards;
- development of current staff;
- fulfilling social and community responsibilities;

- improving society's (particularly young people's) knowledge, understanding, and attitudes about industry;
- enhancing the reputation of the firm and its products.

As the partnerships have developed many of the respondent firms have developed policies for working with education. Reasons givens for policy development include: gaining support of the board; justifying allocation of resources; developing a proactive approach to partnership with clearer business benefits; and communicating to staff and the public reasons for supporting partnerships.

In an article dated May 30, 1995 in the Globe and Mail, Sir Graham Day, currently the chancellor of Dalhousie University in Halifax and past Chairman of Rover Group Holdings in Britain, in a speech to the Canada-United Kingdom Chamber of Commerce indicated that Britain and Canada share an education achievement problem primarily with regard to the lack of basic language and numeracy skills which makes employment-relevant vocational training virtually impossible for many. He suggests that the primary failure is not completing school, and further suggests that one cause of incomplete schooling may be the low value placed on education in both countries. He describes the commitment of his company to education and training and states that "the commitment to education and training by Rover had nothing whatsoever to do with altruism or social responsibility. It had everything to do with Rover's survival and the enhancement of its future prospects."

11.2 SUMMARY OF THE UNITED KINGDOM EXPERIENCE

In some regards the experience of the United Kingdom and North America are similar, an example of this being the high rate of unemployment among youth. There is a view among some sectors that the educational system if properly structured and appropriately focused will overcome inherent economic and social problems. This thinking may be a reflection of the limited control over global competition and the demands of technological innovation. The vestiges of the historical role of schools in protecting children from child labour in mines and factories still linger among some educators who regard business as a threat to educational values and not as a learning resource. Business in both the United Kingdom and North America is now examining the concept of "learning organizations" and the role that they play in life-long learning.

In an article in "Making Their Way" Phillip Brown states: "In the UK and Canada, vocational education and training have become the latest vogue in educational reform, in response to similar economic conditions. However, such similarities hide an emerging divergence in educational policies which can be understood only in terms of the political, social and historical context of the educational systems in the two countries."

12. IMPLICATIONS AND CONSIDERATIONS FOR POLICY DEVELOPMENT

- The literature which addresses the Japanese and the continental European experience identifies a history of cooperation among the economic partners -- business/labour/government who believe that high quality youth training meets their common needs. This climate where youth is valued, and where the education and training of young people is seen to be a responsibility of all sectors is not shared generally in Canada or specifically in Alberta. In the countries referred to above, the following elements were consistently present:

  - young people are accepted as part of the mainstream workforce;
  - investment in vocational training is high;
  - young people are accepted in the workforce as both workers and learners;
  - vocational education is industry-driven through well-established systems;
  - involvement of labour -- employees' associations/trade unions -- and employers' associations is high; and
  - partners set national standards.

  If such a climate of support for high quality education of youth is desirable in Alberta, the challenges are to seek ways to increase that level of support among all economic partners so that those partnerships are mutually beneficial.

- The above countries are currently struggling with the same issues as Canada: global competitiveness; faltering economies; social tensions brought on by immigration, high unemployment, long-term welfare dependency; and a changing workplace. Implications for policy development in school-to-work transition are to identify the strengths and weaknesses of the strategies in these countries, to determine their viability and relevance to the Canadian context, and decide what might be applicable or modified to meet Alberta requirements.

In the above countries, unanimous and ongoing commitment to training in all sectors by all partners is exemplary, and their responses to economic challenges can provide useful information to Alberta in determining the strengths, weaknesses and opportunities of different approaches to similar situations.

- Evidence in the literature related to the above countries points to a strong belief throughout all sectors -- business/education/labour/government -- that human resources are the critical key to future economic success. Because these countries have fewer natural resources, they see their opportunity to gain competitive advantage through a highly skilled and well trained workforce. Evidence is that this realization is not commonly held by Canadian firms which may account for less willingness to share in the responsibility of school-to-work transition.

- The concepts of life-long learning and learning to learn are strong underpinnings for the education and training systems in these countries. These concepts are expected to provide a continuous evolution of skills and opportunities from pre-school through retirement for their citizens. The Canadian experience suggests that these concepts are not yet well established within the fabric of Canadian culture, and evidence is that education is not as highly valued among Canadian youth.

- In Canada, and in Alberta specifically, there is an absence of a body of skills standards across a broad range of industries. Compared to the above countries, there is a dearth of decision-making and consensus building bodies within and across labour unions/employer groups/schools/governments. The literature from the experience in these countries describes that all sectors work to update standards, align standards with academic and vocational education in schools, and provide appropriate methods of assessing and credentialing youth in the mastery of these identified skills requirements.

- In order to enhance success in school-to-work transition, the implications for Canada, and Alberta particularly, are that education and training must be within an environment which includes the following characteristics:

- a responsiveness to concerns of industry and the labour market;
- flexibility;
- business/government/labour/education together creates the climate to build the necessary frameworks and structures for education and training;
- structures and processes that build active involvement by all partners at all levels;
- industry defines its needs;
- financial investment by all partners in education and training;
- effective and efficient processes in order to establish and review standards, develop curricula and assess performance; and
- young people and adults receive training in a broad and technical set of skills.

- The literature clearly outlines key elements of the systems in the countries that support quality school-to-work transition and these elements include:

- universal access;
- establishment of a system (not a series of programs or pilot projects);
- strong emphasis on career education, guidance and support throughout school years;
- commitment of quality employers in all sectors to provide work and learning opportunities for young people;
- a wide range of career pathways;
- integration of academic and vocational education;
- curricula with emphasis on active contextual learning and broad skills training;
- life-long learning; and
- knowledge and understanding of the labour market and labour market trends.

The challenges are to address which, if any, of these elements have application to an Alberta model. To illustrate the implications of applying one of these elements: the issue of career counselling – where teachers have knowledge of the labour market and labour market trends as well as knowledge about jobs and their industry sector has implications for teacher education and ongoing teacher professional development and training. As well, the system concept has significant implications as it would involve a radical shift in thinking about vocational education and its integration with academic education.

- With the changing labour market and current economic realities the above countries face the problem of securing work placements and business partnerships – a similar situation to Alberta. Implications are that strategies and policies must be developed to motivate and encourage firms to participate in providing work place sites and engage in meaningful partnerships.

- By virtue of business being the largest and most powerful interest group among the partners, in developing policy it is important to establish mutual benefit for all partners, and to determine clearly that the focus of partnerships is to promote the best interests of students.

- Goals and objectives of partnership programs should be clearly articulated and agreed to by all parties to the partnership; incentive programs for students using product or service as rewards should be carefully reviewed; and business supplied materials should be reviewed for bias.

- The literature consistently identifies three key areas in order to develop coherence and coordination in school-to-work transition that have implications for government policy:

    - integration of academic and vocational curriculum;

    - integration of school-based learning and work-based learning; and

    - integration of secondary and post-secondary opportunities.

Each of these key areas has major implications for developing frameworks and structures to achieve coherence and coordination in the Alberta model.

- In the literature reviewed from other countries, Canada is the one country whose federal government does not have a national office of education. While the federal government provides funding in a number of educational areas there are no national standards, no national certification requirements, and no national program completion certificates. Essentially, there is not a coherent national strategy for Canadian school-to-work transition, which poses challenges for addressing this provincially in the absence of a defined national presence in education.

- A critical and fundamental decision is whether to design the system for the non-academic or non-university bound student, or whether the system should be designed for all students. The implications of this decision have a bearing on school-based instruction, the integration of vocational and academic curricula, and the integration of school-based learning with work-based learning. If the system is to be designed for the non-academic student, implications are that the image of vocational education will continue to be less-valued and stigmatized.

- Major decisions must be made with regard to offering vocational education with a particular job-related skills focus or to expand that to offer vocational education within the context of industry sectors. Implications also to be considered are the flexibility of these programs in terms of providing for students to change focus or opt for higher education opportunities.

- If school-based and work-based learning are to be integrated in school-to-work systems, the issue must be resolved as to whether work-based learning will be designed to prepare students for immediate employment, which implies learning specific job skills, or whether it will be designed to develop general cognitive skills, which implies a broader set of skills development.

APPENDIX A

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